RADAR Report:

Standardized Dose Estimates for Radiopharmaceuticals

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Introduction

Compilations of radiation dose estimates for radiopharmaceuticals have been developed by several groups, including Stabin et al. (1996) and the International Commission on Radiological Protection (ICRP) (1983-2008). These dose estimates employed the 'stylized' anthropomorphic phantoms developed by Cristy and Eckerman (1987). The RAdiation Dose Assessment Resource, a committee of the Society of Nuclear Medicine and Molecular Imaging (SNMMI) has developed a set of new anthropomorphic phantoms (Stabin et al. 2012), which are based on the recommended body and organ masses given in ICRP Publication 89 (ICRP 2003). The Cristy/Eckerman phantom series was implemented in the OLINDA/EXM personal computer software (Stabin et al. 2005). The new RADAR phantom series is now implemented in version 2 of the OLINDA/EXM code, which also retains the Cristy/Eckerman phantoms, for comparison with results using the current generation of phantoms.

Here we present radiation dose estimates for many radiopharmaceuticals that are of current interest in nuclear medicine, calculated by OLINDA/EXM 2.0, using the metabolic models recommended by the ICRP in its compendia of dose estimates. The Cristy/Eckerman phantoms were 'hermaphrodite', meaning they had both male and female organs. Thus any dose estimate gave doses to both male and female organs in the same table; calculation of the 'effective dose' (ICRP 1991) was based on rules for choosing either the male or female organ dose for assigning the weighting factor for gonads. Now, the phantoms are male and female (separately), and the ICRP has established a method for 'gender averaging' of the dose estimates, using doses for both sets of organs (ICRP 2007). The tables in this document give dose tables for males, females, and the 'gender average' case.

Metabolic models may change periodically. New radiopharmaceuticals are always of interest to the nuclear medicine community. Thus, this report may change periodically, and is being made available to the user community as a ‘living document’. When changes are made, any changes will be documented and made available in a separate, continually updated, document. When downloading this document, note closely the date stamp on the title page. Checking the ‘changes’ document will ensure that the user understands what the most updated dose estimates for a given radiopharmaceutical are.

All dose estimates cited in this document represent population averages for a particular age and gender and should never be applied to an individual patient. Doses are given for several radiopharmaceuticals that may be used in a therapeutic setting. The individual organ doses give population averages that may be useful for planning purposes. However, the ICRP notes in its publication 128 that “[t]he data are not intended for therapeutic applications of radionuclides. More detailed and patient-specific dosimetry and dose planning should be applied for therapeutic application of radionuclides.” It should also be noted that, although provided, the quantity ‘effective dose’ has no meaning in therapeutic applications and should never be cited.

Gastrointestinal Tract Models

The older Cristy/Eckerman phantoms had four regions representing the gastrointestinal (GI) tract: stomach, small intestine, upper large intestine (consisting of the ascending and transverse colons) and the lower large intestine (consisting of the descending and sigmoid colons). The new RADAR phantoms implement the ICRP Human Alimentary Tract (HAT) model, which have a stomach and small intestines, but now define a ‘right colon’ (consisting of the ascending plus the right half of the transverse colon) and a ‘left colon’ (consisting of the left half of the transverse and the descending colon), then a separate sigmoid colon (or rectum). In order to scale the values of normalized numbers of disintegrations given in the ICRP publications for the older GI tract model to the new HAT model, the values in each region were scaled by the mass of each region, depending on whether disintegrations were assigned to the region contents or walls.

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* [Normal Renal Function](#Tc99mmag3norm)
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* [Intact](#Tc99mmabintact)
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[111In-human immunoglobulin (HIG)](#In111hig)

111In- tumor-associated antibodies

* [Intact](#In111taaintact)
* [Fab2](#In111taafab2)
* [Fab](#In111taafab)

[111In- octreotide](#In111octreo)

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123I iodide

* [0%, thyroid blocked](#I123nai0)
* [5%](#I123nai5)
* [15%](#I123nai15)
* [25%](#I123nai25)
* [35%](#I123nai35)
* [45%](#I123nai45)
* [55%](#I123nai55)

124I iodide

* [0%, thyroid blocked](#I124NaI0)
* [5%](#I124NaI5)
* [15%](#I124NaI15)
* [25%](#I124NaI25)
* [35%](#I124NaI35)
* [45%](#I124NaI45)
* [55%](#I124NaI55)

125I iodide

* [0%, thyroid blocked](#I125NaI0)
* [5%](#I125NaI5)
* [15%](#I125NaI15)
* [25%](#I125NaI25)
* [35%](#I125NaI35)
* [45%](#I125NaI45)
* [55%](#I125NaI55)

131I iodide

* [0%, thyroid blocked](#I131nai0)
* [5%](#I131nai5)
* [15%](#I131nai15)
* [25%](#I131nai25)
* [35%](#I131nai35)
* [45%](#I131nai45)
* [55%](#I131nai55)

123I- tumor-associated antibodies

* [Intact](#I123mabintact)
* [Fab2](#I123mabfab2)
* [Fab](#I123mabfab)

131I- tumor-associated antibodies

* [Intact](#I131mabintact)
* [Fab2](#I131mabfab2)
* [Fab](#I131mabfab)

127Xe gas

* [Single Inhalation, 30 s Breath Hold](#Xe12730s)
* [Rebreathing for 5 min](#Xe127rebreath5)
* [Rebreathing for 10 min](#Xe127rebreath10)

133Xe gas

* [Single Inhalation, 30 s Breath Hold](#Xe13330s)
* [Rebreathing for 5 min](#Xe133rebreath5)
* [Rebreathing for 10 min](#Xe133rebreath10)

[153Sm EDTMP](#SM153EDTMP)

[201Tl ion](#Tl201)

Radiation Dose Estimates (mSv/MBq) for 3H Water

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Brain 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Esophagus 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Eyes 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Gallbladder Wall 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Left colon 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Small Intestine 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Stomach Wall 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Right colon 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Rectum 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Heart Wall 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Kidneys 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Liver 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Lungs 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Pancreas 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Prostate 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Salivary Glands 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Red Marrow 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.33E-02

Osteogenic Cells 7.24E-03 9.06E-03 1.08E-02 1.37E-02 2.84E-02

Spleen 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Testes 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Thymus 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Thyroid 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Urinary Bladder Wall 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Total Body 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Brain 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Breasts 1.83E-02 1.63E-02 ----- ----- -----

Esophagus 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Eyes 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Gallbladder Wall 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Left colon 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Small Intestine 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Stomach Wall 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Right colon 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Rectum 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Heart Wall 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Kidneys 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Liver 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Lungs 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Ovaries 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Pancreas 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Salivary Glands 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Red Marrow 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.33E-02

Osteogenic Cells 6.76E-03 8.86E-03 1.08E-02 1.37E-02 2.84E-02

Spleen 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Thymus 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Thyroid 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Urinary Bladder Wall 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Uterus 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Total Body 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Brain 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Esophagus 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Eyes 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Gallbladder Wall 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Left colon 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Small Intestine 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Stomach Wall 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Right colon 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Rectum 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Heart Wall 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Kidneys 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Liver 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Lungs 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Ovaries 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Pancreas 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Prostate 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Salivary Glands 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Red Marrow 1.67E-02 1.89E-02 1.89E-02 2.48E-02 4.33E-02

Osteogenic Cells 7.00E-03 2.44E-02 1.08E-02 1.37E-02 2.84E-02

Spleen 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Testes 1.51E-02 1.54E-02 1.89E-02 2.48E-02 4.32E-02

Thymus 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Thyroid 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Urinary Bladder Wall 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Uterus 1.83E-02 1.63E-02 1.89E-02 2.48E-02 4.32E-02

Total Body 1.67E-02 1.59E-02 1.89E-02 2.48E-02 4.32E-02

Effective Dose 1.70E-02 1.66E-02 1.80E-02 2.36E-02 4.11E-02

Radiation Dose Estimates (mSv/MBq) for 11C Acetate

Biokinetic data: ICRP 106 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.56E-03 9.94E-03 1.48E-02 2.17E-02 3.51E-02

Brain 9.75E-04 1.24E-03 2.09E-03 3.48E-03 6.34E-03

Esophagus 2.18E-03 2.85E-03 4.52E-03 7.13E-03 1.30E-02

Eyes 9.77E-04 1.24E-03 2.10E-03 3.62E-03 6.60E-03

Gallbladder Wall 4.41E-03 5.37E-03 7.54E-03 1.13E-02 1.90E-02

Left colon 2.26E-03 2.84E-03 4.30E-03 6.59E-03 1.13E-02

Small Intestine 1.94E-03 2.46E-03 3.85E-03 6.06E-03 1.06E-02

Stomach Wall 2.41E-03 3.04E-03 4.67E-03 7.08E-03 1.19E-02

Right colon 2.34E-03 2.92E-03 4.70E-03 7.15E-03 1.20E-02

Rectum 1.39E-03 1.67E-03 2.76E-03 4.52E-03 8.03E-03

Heart Wall 1.21E-02 1.67E-02 2.69E-02 4.31E-02 7.27E-02

Kidneys 5.15E-02 6.30E-02 8.59E-02 1.36E-01 2.09E-01

Liver 1.44E-02 1.93E-02 2.88E-02 4.08E-02 6.73E-02

Lungs 1.90E-03 2.44E-03 3.78E-03 5.83E-03 1.03E-02

Pancreas 8.44E-03 1.06E-02 1.81E-02 2.94E-02 5.03E-02

Prostate 1.46E-03 1.74E-03 2.78E-03 4.51E-03 8.09E-03

Salivary Glands 1.11E-03 1.44E-03 2.36E-03 4.00E-03 7.45E-03

Red Marrow 1.45E-03 1.73E-03 2.70E-03 3.66E-03 7.01E-03

Osteogenic Cells 1.13E-03 1.32E-03 1.97E-03 2.65E-03 4.60E-03

Spleen 2.74E-03 3.53E-03 5.38E-03 8.21E-03 1.42E-02

Testes 1.06E-03 1.34E-03 2.15E-03 3.65E-03 6.97E-03

Thymus 1.89E-03 2.45E-03 3.54E-03 5.96E-03 1.04E-02

Thyroid 1.27E-03 1.62E-03 2.66E-03 4.41E-03 8.24E-03

Urinary Bladder Wall 1.31E-03 1.57E-03 2.51E-03 4.37E-03 7.60E-03

Total Body 1.76E-03 2.21E-03 3.65E-03 5.87E-03 1.07E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.78E-03 7.90E-03 1.16E-02 1.64E-02 2.90E-02

Brain 1.20E-03 1.27E-03 2.09E-03 3.48E-03 6.32E-03

Breasts 1.50E-03 1.64E-03 ----- ----- -----

Esophagus 2.87E-03 3.17E-03 4.91E-03 7.64E-03 1.41E-02

Eyes 1.20E-03 1.28E-03 2.09E-03 3.48E-03 6.34E-03

Gallbladder Wall 4.70E-03 5.12E-03 7.37E-03 1.04E-02 1.76E-02

Left colon 2.57E-03 2.63E-03 3.90E-03 5.95E-03 1.05E-02

Small Intestine 2.36E-03 2.61E-03 3.95E-03 6.11E-03 1.08E-02

Stomach Wall 2.71E-03 2.85E-03 4.26E-03 6.50E-03 1.10E-02

Right colon 2.53E-03 2.74E-03 4.42E-03 6.98E-03 1.26E-02

Rectum 1.63E-03 1.64E-03 2.65E-03 4.17E-03 7.37E-03

Heart Wall 1.53E-02 1.71E-02 3.63E-02 4.23E-02 3.79E-02

Kidneys 5.74E-02 6.54E-02 8.58E-02 1.36E-01 2.09E-01

Liver 1.81E-02 1.93E-02 2.90E-02 4.08E-02 6.77E-02

Lungs 2.34E-03 2.53E-03 3.72E-03 5.73E-03 9.88E-03

Ovaries 1.75E-03 1.90E-03 2.95E-03 4.68E-03 8.33E-03

Pancreas 1.06E-02 1.23E-02 1.93E-02 3.12E-02 5.15E-02

Salivary Glands 1.29E-03 1.48E-03 2.36E-03 3.88E-03 7.11E-03

Red Marrow 1.79E-03 1.69E-03 2.08E-03 2.93E-03 5.31E-03

Osteogenic Cells 1.31E-03 1.29E-03 1.50E-03 1.77E-03 2.57E-03

Spleen 3.85E-03 4.14E-03 6.10E-03 9.39E-03 1.63E-02

Thymus 2.10E-03 2.32E-03 3.48E-03 5.36E-03 9.29E-03

Thyroid 1.47E-03 1.67E-03 2.64E-03 4.28E-03 7.71E-03

Urinary Bladder Wall 1.38E-03 1.57E-03 2.44E-03 4.00E-03 6.83E-03

Uterus 1.70E-03 1.86E-03 2.88E-03 4.54E-03 8.22E-03

Total Body 2.41E-03 2.31E-03 3.65E-03 5.85E-03 1.07E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.17E-03 8.92E-03 1.32E-02 1.90E-02 3.20E-02

Brain 1.09E-03 1.25E-03 2.09E-03 3.48E-03 6.33E-03

Breasts 1.50E-03 1.64E-03 ----- ----- -----

Esophagus 2.52E-03 3.01E-03 4.71E-03 7.38E-03 1.36E-02

Eyes 1.09E-03 1.26E-03 2.09E-03 3.55E-03 6.47E-03

Gallbladder Wall 4.55E-03 5.25E-03 7.45E-03 1.08E-02 1.83E-02

Left colon 2.41E-03 2.73E-03 4.10E-03 6.27E-03 1.09E-02

Small Intestine 2.15E-03 2.54E-03 3.90E-03 6.08E-03 1.07E-02

Stomach Wall 2.56E-03 2.95E-03 4.46E-03 6.79E-03 1.14E-02

Right colon 2.44E-03 2.83E-03 4.56E-03 7.06E-03 1.23E-02

Rectum 1.51E-03 1.66E-03 2.71E-03 4.34E-03 7.70E-03

Heart Wall 1.37E-02 1.69E-02 3.16E-02 4.27E-02 5.53E-02

Kidneys 5.44E-02 6.42E-02 8.58E-02 1.36E-01 2.09E-01

Liver 1.63E-02 1.93E-02 2.89E-02 4.08E-02 6.75E-02

Lungs 2.12E-03 2.48E-03 3.75E-03 5.78E-03 1.01E-02

Ovaries 1.75E-03 1.90E-03 2.95E-03 4.68E-03 8.33E-03

Pancreas 9.53E-03 1.14E-02 1.87E-02 3.03E-02 5.09E-02

Prostate 1.46E-03 1.74E-03 2.78E-03 4.51E-03 8.09E-03

Salivary Glands 1.20E-03 1.46E-03 2.36E-03 3.94E-03 7.28E-03

Red Marrow 1.62E-03 1.71E-03 2.39E-03 3.29E-03 6.16E-03

Osteogenic Cells 1.22E-03 1.31E-03 1.74E-03 2.21E-03 3.59E-03

Spleen 3.29E-03 3.84E-03 5.74E-03 8.80E-03 1.52E-02

Testes 1.06E-03 1.34E-03 2.15E-03 3.65E-03 6.97E-03

Thymus 2.00E-03 2.39E-03 3.51E-03 5.66E-03 9.86E-03

Thyroid 1.37E-03 1.65E-03 2.65E-03 4.35E-03 7.97E-03

Urinary Bladder Wall 1.34E-03 1.57E-03 2.48E-03 4.18E-03 7.22E-03

Uterus 1.70E-03 1.86E-03 2.88E-03 4.54E-03 8.22E-03

Total Body 2.09E-03 2.26E-03 3.65E-03 5.86E-03 1.07E-02

Effective Dose 3.12E-03 3.63E-03 5.30E-03 7.97E-03 1.33E-02

Radiation Dose Estimates (mSv/MBq) for 11C Brain Receptor Substances

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.89E-03 3.69E-03 5.87E-03 9.80E-03 1.83E-02

Brain 5.02E-03 5.17E-03 5.45E-03 6.22E-03 8.76E-03

Esophagus 2.54E-03 3.28E-03 5.38E-03 9.45E-03 1.79E-02

Eyes 2.42E-03 3.01E-03 4.82E-03 8.10E-03 1.46E-02

Gallbladder Wall 1.76E-02 2.21E-02 3.67E-02 6.14E-02 1.12E-01

Left colon 3.12E-03 3.70E-03 6.22E-03 9.90E-03 1.77E-02

Small Intestine 6.80E-03 8.47E-03 1.39E-02 2.09E-02 3.23E-02

Stomach Wall 2.75E-03 3.42E-03 5.43E-03 8.90E-03 1.62E-02

Right colon 4.14E-03 5.16E-03 8.24E-03 1.28E-02 2.12E-02

Rectum 3.87E-03 4.68E-03 7.92E-03 1.25E-02 2.16E-02

Heart Wall 2.71E-03 3.47E-03 5.63E-03 9.01E-03 1.65E-02

Kidneys 2.76E-03 3.51E-03 5.58E-03 9.39E-03 1.70E-02

Liver 2.85E-03 3.64E-03 5.72E-03 9.45E-03 1.70E-02

Lungs 2.44E-03 3.17E-03 5.06E-03 8.37E-03 1.56E-02

Pancreas 3.06E-03 3.88E-03 6.21E-03 1.00E-02 1.81E-02

Prostate 4.27E-03 5.19E-03 1.19E-02 1.27E-02 2.08E-02

Salivary Glands 2.67E-03 3.38E-03 5.34E-03 8.82E-03 1.63E-02

Red Marrow 2.43E-03 3.06E-03 4.77E-03 7.73E-03 1.57E-02

Osteogenic Cells 2.04E-03 2.55E-03 3.75E-03 5.69E-03 1.05E-02

Spleen 2.67E-03 3.41E-03 5.41E-03 9.18E-03 1.67E-02

Testes 2.73E-03 3.46E-03 6.28E-03 9.24E-03 1.73E-02

Thymus 2.50E-03 3.23E-03 5.19E-03 8.55E-03 1.59E-02

Thyroid 2.51E-03 3.23E-03 5.29E-03 8.96E-03 1.73E-02

Urinary Bladder Wall 3.35E-02 4.23E-02 6.46E-02 9.83E-02 1.77E-01

Total Body 2.79E-03 3.51E-03 5.79E-03 9.33E-03 1.72E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.56E-03 3.83E-03 5.95E-03 9.45E-03 1.72E-02

Brain 5.64E-03 5.53E-03 6.12E-03 6.75E-03 8.73E-03

Breasts 2.59E-03 2.80E-03 ----- ----- -----

Esophagus 2.91E-03 3.35E-03 5.35E-03 8.79E-03 1.63E-02

Eyes 2.98E-03 3.19E-03 4.91E-03 7.76E-03 1.38E-02

Gallbladder Wall 2.08E-02 2.34E-02 3.66E-02 6.07E-02 1.11E-01

Left colon 3.84E-03 3.90E-03 6.34E-03 9.73E-03 1.73E-02

Small Intestine 8.14E-03 8.65E-03 1.40E-02 1.03E-02 1.84E-02

Stomach Wall 3.40E-03 3.54E-03 5.44E-03 8.62E-03 1.56E-02

Right colon 4.67E-03 5.15E-03 8.18E-03 9.58E-03 1.68E-02

Rectum 5.82E-03 6.82E-03 9.84E-03 1.44E-02 2.41E-02

Heart Wall 3.32E-03 3.52E-03 5.56E-03 8.76E-03 1.60E-02

Kidneys 3.46E-03 3.70E-03 5.72E-03 9.22E-03 1.67E-02

Liver 3.39E-03 3.62E-03 5.56E-03 9.05E-03 1.65E-02

Lungs 3.05E-03 3.25E-03 5.03E-03 7.99E-03 1.49E-02

Ovaries 4.57E-03 5.16E-03 7.37E-03 1.24E-02 2.23E-02

Pancreas 3.80E-03 4.07E-03 6.31E-03 9.67E-03 1.77E-02

Salivary Glands 3.06E-03 3.50E-03 5.40E-03 8.56E-03 1.55E-02

Red Marrow 2.94E-03 3.08E-03 4.07E-03 6.08E-03 1.16E-02

Osteogenic Cells 2.36E-03 2.55E-03 3.00E-03 3.64E-03 5.46E-03

Spleen 3.31E-03 3.53E-03 5.45E-03 8.86E-03 1.61E-02

Thymus 3.11E-03 3.31E-03 5.16E-03 8.21E-03 1.54E-02

Thyroid 2.89E-03 3.32E-03 5.28E-03 8.68E-03 1.60E-02

Urinary Bladder Wall 3.99E-02 4.05E-02 6.11E-02 9.55E-02 1.76E-01

Uterus 5.97E-03 7.26E-03 1.17E-02 1.68E-02 2.76E-02

Total Body 3.46E-03 3.62E-03 5.76E-03 9.09E-03 1.69E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.23E-03 3.76E-03 5.91E-03 9.63E-03 1.77E-02

Brain 5.33E-03 5.35E-03 5.79E-03 6.48E-03 8.75E-03

Breasts 2.59E-03 2.80E-03 ----- ----- -----

Esophagus 2.72E-03 3.32E-03 5.36E-03 9.12E-03 1.71E-02

Eyes 2.70E-03 3.10E-03 4.86E-03 7.93E-03 1.42E-02

Gallbladder Wall 1.92E-02 2.27E-02 3.67E-02 6.11E-02 1.11E-01

Left colon 3.48E-03 3.80E-03 6.28E-03 9.81E-03 1.75E-02

Small Intestine 7.47E-03 8.56E-03 1.40E-02 1.56E-02 2.54E-02

Stomach Wall 3.08E-03 3.48E-03 5.44E-03 8.76E-03 1.59E-02

Right colon 4.41E-03 5.15E-03 8.21E-03 1.12E-02 1.90E-02

Rectum 4.85E-03 5.75E-03 8.88E-03 1.35E-02 2.29E-02

Heart Wall 3.01E-03 3.50E-03 5.59E-03 8.88E-03 1.62E-02

Kidneys 3.11E-03 3.60E-03 5.65E-03 9.30E-03 1.69E-02

Liver 3.12E-03 3.63E-03 5.64E-03 9.25E-03 1.68E-02

Lungs 2.74E-03 3.21E-03 5.05E-03 8.18E-03 1.53E-02

Ovaries 4.57E-03 5.16E-03 7.37E-03 1.24E-02 2.23E-02

Pancreas 3.43E-03 3.98E-03 6.26E-03 9.85E-03 1.79E-02

Prostate 4.27E-03 5.19E-03 1.19E-02 1.27E-02 2.08E-02

Salivary Glands 2.87E-03 3.44E-03 5.37E-03 8.69E-03 1.59E-02

Red Marrow 2.69E-03 3.07E-03 4.42E-03 6.91E-03 1.37E-02

Osteogenic Cells 2.20E-03 2.55E-03 3.37E-03 4.66E-03 7.99E-03

Spleen 2.99E-03 3.47E-03 5.43E-03 9.02E-03 1.64E-02

Testes 2.73E-03 3.46E-03 6.28E-03 9.24E-03 1.73E-02

Thymus 2.81E-03 3.27E-03 5.17E-03 8.38E-03 1.56E-02

Thyroid 2.70E-03 3.28E-03 5.29E-03 8.82E-03 1.67E-02

Urinary Bladder Wall 3.67E-02 4.14E-02 6.28E-02 9.69E-02 1.77E-01

Uterus 5.97E-03 7.26E-03 1.17E-02 1.68E-02 2.76E-02

Total Body 3.12E-03 3.57E-03 5.77E-03 9.21E-03 1.71E-02

Effective Dose 4.38E-03 5.01E-03 7.47E-03 1.16E-02 2.12E-02

Radiation Dose Estimates (mSv/MBq) for 11C L-Methionine

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.54E-03 7.22E-03 1.07E-02 1.60E-02 2.67E-02

Brain 2.11E-03 2.19E-03 2.35E-03 2.73E-03 3.93E-03

Esophagus 2.04E-03 2.69E-03 4.33E-03 6.82E-03 1.24E-02

Eyes 1.17E-03 1.45E-03 2.35E-03 3.98E-03 7.18E-03

Gallbladder Wall 4.03E-03 4.86E-03 6.98E-03 1.05E-02 1.78E-02

Left colon 2.53E-03 3.06E-03 4.80E-03 7.16E-03 1.24E-02

Small Intestine 4.72E-03 5.89E-03 9.63E-03 1.43E-02 2.20E-02

Stomach Wall 2.38E-03 3.02E-03 4.67E-03 7.22E-03 1.24E-02

Right colon 3.09E-03 3.89E-03 6.11E-03 9.01E-03 1.46E-02

Rectum 4.47E-03 5.63E-03 9.66E-03 1.44E-02 2.35E-02

Heart Wall 2.21E-03 2.83E-03 4.46E-03 6.80E-03 1.22E-02

Kidneys 2.87E-02 3.52E-02 4.81E-02 7.64E-02 1.18E-01

Liver 1.21E-02 1.62E-02 2.42E-02 3.45E-02 5.70E-02

Lungs 3.94E-03 5.13E-03 8.61E-03 1.38E-02 2.62E-02

Pancreas 1.03E-02 1.29E-02 2.23E-02 3.67E-02 6.27E-02

Prostate 5.89E-03 7.33E-03 2.22E-02 1.62E-02 2.31E-02

Salivary Glands 1.32E-03 1.68E-03 2.66E-03 4.39E-03 8.15E-03

Red Marrow 1.99E-03 2.41E-03 3.35E-03 4.55E-03 8.41E-03

Osteogenic Cells 1.46E-03 1.66E-03 2.31E-03 3.18E-03 5.56E-03

Spleen 6.61E-03 7.81E-03 1.21E-02 1.88E-02 3.18E-02

Testes 2.20E-03 2.84E-03 6.64E-03 6.97E-03 1.22E-02

Thymus 1.61E-03 2.13E-03 3.27E-03 5.51E-03 1.02E-02

Thyroid 1.45E-03 1.87E-03 3.04E-03 5.05E-03 9.50E-03

Urinary Bladder Wall 9.07E-02 1.15E-01 1.75E-01 2.69E-01 5.08E-01

Total Body 2.51E-03 3.16E-03 5.22E-03 8.41E-03 1.53E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.69E-03 6.54E-03 9.65E-03 1.39E-02 2.45E-02

Brain 2.39E-03 2.33E-03 2.62E-03 2.99E-03 3.96E-03

Breasts 1.55E-03 1.68E-03 ----- ----- -----

Esophagus 2.54E-03 2.85E-03 4.42E-03 6.90E-03 1.30E-02

Eyes 1.44E-03 1.53E-03 2.38E-03 3.81E-03 6.86E-03

Gallbladder Wall 4.19E-03 4.57E-03 6.68E-03 9.50E-03 1.64E-02

Left colon 2.95E-03 3.24E-03 5.16E-03 8.28E-03 1.43E-02

Small Intestine 5.76E-03 6.12E-03 9.68E-03 1.43E-02 2.15E-02

Stomach Wall 2.78E-03 2.93E-03 4.39E-03 6.85E-03 1.17E-02

Right colon 3.27E-03 3.64E-03 5.86E-03 8.89E-03 1.45E-02

Rectum 8.74E-03 1.18E-02 1.54E-02 2.14E-02 3.35E-02

Heart Wall 2.38E-03 2.56E-03 3.92E-03 6.09E-03 1.10E-02

Kidneys 3.21E-02 3.65E-02 4.81E-02 7.63E-02 1.17E-01

Liver 1.53E-02 1.63E-02 2.45E-02 3.45E-02 5.75E-02

Lungs 4.87E-03 5.82E-03 8.49E-03 1.35E-02 2.56E-02

Ovaries 4.94E-03 6.05E-03 7.41E-03 1.45E-02 2.53E-02

Pancreas 1.27E-02 1.47E-02 2.34E-02 3.81E-02 6.38E-02

Salivary Glands 1.52E-03 1.73E-03 2.69E-03 4.32E-03 7.86E-03

Red Marrow 2.36E-03 2.25E-03 2.68E-03 3.62E-03 6.24E-03

Osteogenic Cells 1.64E-03 1.59E-03 1.79E-03 2.11E-03 2.94E-03

Spleen 7.98E-03 8.15E-03 1.25E-02 1.95E-02 3.28E-02

Thymus 2.06E-03 2.25E-03 3.38E-03 5.37E-03 9.80E-03

Thyroid 1.66E-03 1.89E-03 2.96E-03 4.83E-03 8.73E-03

Urinary Bladder Wall 1.09E-01 1.09E-01 1.64E-01 2.56E-01 4.84E-01

Uterus 9.00E-03 1.21E-02 2.01E-02 2.75E-02 4.12E-02

Total Body 3.33E-03 3.26E-03 5.16E-03 8.27E-03 1.52E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.62E-03 6.88E-03 1.02E-02 1.49E-02 2.56E-02

Brain 2.25E-03 2.26E-03 2.48E-03 2.86E-03 3.95E-03

Breasts 1.55E-03 1.68E-03 ----- ----- -----

Esophagus 2.29E-03 2.77E-03 4.37E-03 6.86E-03 1.27E-02

Eyes 1.30E-03 1.49E-03 2.36E-03 3.89E-03 7.02E-03

Gallbladder Wall 4.11E-03 4.72E-03 6.83E-03 9.98E-03 1.71E-02

Left colon 2.74E-03 3.15E-03 4.98E-03 7.72E-03 1.33E-02

Small Intestine 5.24E-03 6.00E-03 9.66E-03 1.43E-02 2.17E-02

Stomach Wall 2.58E-03 2.97E-03 4.53E-03 7.03E-03 1.21E-02

Right colon 3.18E-03 3.76E-03 5.99E-03 8.95E-03 1.46E-02

Rectum 6.60E-03 8.70E-03 1.25E-02 1.79E-02 2.85E-02

Heart Wall 2.29E-03 2.69E-03 4.19E-03 6.44E-03 1.16E-02

Kidneys 3.04E-02 3.59E-02 4.81E-02 7.64E-02 1.18E-01

Liver 1.37E-02 1.63E-02 2.43E-02 3.45E-02 5.73E-02

Lungs 4.40E-03 5.48E-03 8.55E-03 1.37E-02 2.59E-02

Ovaries 4.94E-03 6.05E-03 7.41E-03 1.45E-02 2.53E-02

Pancreas 1.15E-02 1.38E-02 2.29E-02 3.74E-02 6.32E-02

Prostate 5.89E-03 7.33E-03 2.22E-02 1.62E-02 2.31E-02

Salivary Glands 1.42E-03 1.71E-03 2.67E-03 4.35E-03 8.01E-03

Red Marrow 2.17E-03 2.33E-03 3.02E-03 4.08E-03 7.33E-03

Osteogenic Cells 1.55E-03 1.63E-03 2.05E-03 2.64E-03 4.25E-03

Spleen 7.30E-03 7.98E-03 1.23E-02 1.92E-02 3.23E-02

Testes 2.20E-03 2.84E-03 6.64E-03 6.97E-03 1.22E-02

Thymus 1.84E-03 2.19E-03 3.33E-03 5.44E-03 1.00E-02

Thyroid 1.56E-03 1.88E-03 3.00E-03 4.94E-03 9.12E-03

Urinary Bladder Wall 9.96E-02 1.12E-01 1.70E-01 2.62E-01 4.96E-01

Uterus 9.00E-03 1.21E-02 2.01E-02 2.75E-02 4.12E-02

Total Body 2.92E-03 3.21E-03 5.19E-03 8.34E-03 1.52E-02

Effective Dose 7.53E-03 8.68E-03 1.29E-02 1.98E-02 3.60E-02

Radiation Dose Estimates (mSv/MBq) for 11C Raclopride

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.14E-03 7.97E-03 1.18E-02 1.78E-02 2.98E-02

Brain 2.74E-03 2.84E-03 3.06E-03 3.58E-03 5.19E-03

Esophagus 2.64E-03 3.46E-03 5.55E-03 9.01E-03 1.66E-02

Eyes 1.64E-03 2.05E-03 3.32E-03 5.62E-03 1.02E-02

Gallbladder Wall 2.00E-02 2.50E-02 4.02E-02 6.62E-02 1.19E-01

Left colon 3.25E-03 4.02E-03 6.54E-03 1.00E-02 1.72E-02

Small Intestine 1.78E-02 2.21E-02 3.44E-02 5.23E-02 9.61E-02

Stomach Wall 2.80E-03 3.57E-03 5.55E-03 8.67E-03 1.50E-02

Right colon 5.69E-03 7.16E-03 1.14E-02 1.68E-02 2.55E-02

Rectum 2.96E-03 3.59E-03 6.01E-03 9.45E-03 1.62E-02

Heart Wall 7.34E-03 1.01E-02 1.60E-02 2.55E-02 4.31E-02

Kidneys 2.60E-02 3.19E-02 4.36E-02 6.93E-02 1.07E-01

Liver 1.56E-02 2.08E-02 3.11E-02 4.43E-02 7.31E-02

Lungs 2.44E-03 3.14E-03 4.91E-03 7.75E-03 1.40E-02

Pancreas 3.54E-03 4.48E-03 6.93E-03 1.07E-02 1.88E-02

Prostate 3.15E-03 3.90E-03 8.46E-03 9.55E-03 1.58E-02

Salivary Glands 1.84E-03 2.34E-03 3.71E-03 6.15E-03 1.14E-02

Red Marrow 3.01E-03 3.56E-03 5.55E-03 9.19E-03 2.02E-02

Osteogenic Cells 2.25E-03 2.76E-03 4.13E-03 6.29E-03 1.27E-02

Spleen 2.79E-03 3.59E-03 5.59E-03 8.93E-03 1.59E-02

Testes 1.90E-03 2.43E-03 4.38E-03 6.51E-03 1.23E-02

Thymus 2.27E-03 2.97E-03 4.52E-03 7.56E-03 1.37E-02

Thyroid 1.90E-03 2.45E-03 3.99E-03 6.71E-03 1.28E-02

Urinary Bladder Wall 2.19E-02 2.77E-02 4.23E-02 6.57E-02 1.23E-01

Total Body 2.60E-03 3.27E-03 5.41E-03 8.74E-03 1.61E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.18E-03 7.16E-03 1.05E-02 1.53E-02 2.71E-02

Brain 3.11E-03 3.03E-03 3.41E-03 3.88E-03 5.19E-03

Breasts 2.12E-03 2.30E-03 ----- ----- -----

Esophagus 3.31E-03 3.71E-03 5.78E-03 9.16E-03 1.73E-02

Eyes 2.02E-03 2.14E-03 3.34E-03 5.34E-03 9.68E-03

Gallbladder Wall 2.25E-02 2.53E-02 3.91E-02 6.39E-02 1.16E-01

Left colon 3.72E-03 3.85E-03 6.08E-03 9.40E-03 1.62E-02

Small Intestine 2.08E-02 2.23E-02 3.45E-02 3.31E-02 6.56E-02

Stomach Wall 3.37E-03 3.55E-03 5.35E-03 8.40E-03 1.46E-02

Right colon 5.89E-03 6.84E-03 1.10E-02 1.62E-02 2.48E-02

Rectum 4.15E-03 4.84E-03 7.06E-03 1.04E-02 1.74E-02

Heart Wall 9.04E-03 1.00E-02 2.06E-02 2.45E-02 2.41E-02

Kidneys 2.93E-02 3.32E-02 4.38E-02 6.94E-02 1.07E-01

Liver 1.95E-02 2.07E-02 3.11E-02 4.40E-02 7.32E-02

Lungs 2.99E-03 3.22E-03 4.82E-03 7.51E-03 1.34E-02

Ovaries 3.55E-03 3.98E-03 5.73E-03 9.67E-03 1.71E-02

Pancreas 5.00E-03 5.40E-03 8.05E-03 1.23E-02 2.02E-02

Salivary Glands 2.11E-03 2.41E-03 3.74E-03 6.01E-03 1.10E-02

Red Marrow 3.75E-03 3.61E-03 4.89E-03 7.98E-03 1.72E-02

Osteogenic Cells 2.53E-03 2.75E-03 3.51E-03 4.82E-03 9.01E-03

Spleen 3.71E-03 3.99E-03 5.98E-03 9.51E-03 1.68E-02

Thymus 2.69E-03 2.93E-03 4.45E-03 7.02E-03 1.28E-02

Thyroid 2.19E-03 2.50E-03 3.96E-03 6.50E-03 1.20E-02

Urinary Bladder Wall 2.61E-02 2.64E-02 3.99E-02 6.25E-02 1.17E-01

Uterus 4.45E-03 5.34E-03 8.51E-03 1.25E-02 2.07E-02

Total Body 3.44E-03 3.40E-03 5.40E-03 8.69E-03 1.61E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.16E-03 7.56E-03 1.12E-02 1.65E-02 2.85E-02

Brain 2.92E-03 2.93E-03 3.23E-03 3.73E-03 5.19E-03

Breasts 2.12E-03 2.30E-03 ----- ----- -----

Esophagus 2.97E-03 3.58E-03 5.67E-03 9.09E-03 1.69E-02

Eyes 1.83E-03 2.09E-03 3.33E-03 5.48E-03 9.93E-03

Gallbladder Wall 2.12E-02 2.51E-02 3.96E-02 6.51E-02 1.17E-01

Left colon 3.48E-03 3.93E-03 6.31E-03 9.71E-03 1.67E-02

Small Intestine 1.93E-02 2.22E-02 3.44E-02 5.90E-02 8.36E-02

Stomach Wall 3.09E-03 3.56E-03 5.45E-03 8.53E-03 1.48E-02

Right colon 5.79E-03 7.00E-03 1.12E-02 1.65E-02 2.52E-02

Rectum 3.56E-03 4.22E-03 6.53E-03 9.93E-03 1.68E-02

Heart Wall 8.19E-03 1.01E-02 1.83E-02 2.50E-02 3.36E-02

Kidneys 2.76E-02 3.26E-02 4.37E-02 6.93E-02 1.07E-01

Liver 1.76E-02 2.08E-02 3.11E-02 4.41E-02 7.32E-02

Lungs 2.71E-03 3.18E-03 4.86E-03 7.63E-03 1.37E-02

Ovaries 3.55E-03 3.98E-03 5.73E-03 9.67E-03 1.71E-02

Pancreas 4.27E-03 4.94E-03 7.49E-03 1.15E-02 1.95E-02

Prostate 3.15E-03 3.90E-03 8.46E-03 9.55E-03 1.58E-02

Salivary Glands 1.98E-03 2.38E-03 3.72E-03 6.08E-03 1.12E-02

Red Marrow 3.38E-03 3.58E-03 5.22E-03 8.58E-03 1.87E-02

Osteogenic Cells 2.39E-03 2.75E-03 3.82E-03 5.56E-03 1.08E-02

Spleen 3.25E-03 3.79E-03 5.78E-03 9.22E-03 1.63E-02

Testes 1.90E-03 2.43E-03 4.38E-03 6.51E-03 1.23E-02

Thymus 2.48E-03 2.95E-03 4.48E-03 7.29E-03 1.32E-02

Thyroid 2.04E-03 2.47E-03 3.98E-03 6.61E-03 1.24E-02

Urinary Bladder Wall 2.40E-02 2.71E-02 4.11E-02 6.41E-02 1.20E-01

Uterus 4.45E-03 5.34E-03 8.51E-03 1.25E-02 2.07E-02

Total Body 3.02E-03 3.34E-03 5.40E-03 8.71E-03 1.61E-02

Effective Dose 4.84E-03 5.59E-03 8.29E-03 1.27E-02 2.25E-02

Radiation Dose Estimates (mSv/MBq) for 11C Thymidine

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.40E-03 4.38E-03 6.73E-03 1.07E-02 1.89E-02

Brain 1.87E-03 2.37E-03 4.00E-03 6.66E-03 1.21E-02

Esophagus 2.24E-03 2.90E-03 4.71E-03 8.12E-03 1.52E-02

Eyes 1.87E-03 2.37E-03 4.00E-03 6.91E-03 1.26E-02

Gallbladder Wall 3.02E-03 3.68E-03 5.63E-03 8.56E-03 1.51E-02

Left colon 2.50E-03 2.97E-03 4.91E-03 7.83E-03 1.40E-02

Small Intestine 2.50E-03 3.15E-03 5.02E-03 8.17E-03 1.51E-02

Stomach Wall 2.42E-03 2.99E-03 4.69E-03 7.56E-03 1.35E-02

Right colon 2.55E-03 3.14E-03 5.02E-03 8.10E-03 1.43E-02

Rectum 2.37E-03 2.80E-03 4.67E-03 7.72E-03 1.39E-02

Heart Wall 2.41E-03 3.08E-03 4.92E-03 7.73E-03 1.39E-02

Kidneys 1.02E-02 1.25E-02 1.71E-02 2.73E-02 4.24E-02

Liver 4.95E-03 6.60E-03 9.76E-03 1.42E-02 2.36E-02

Lungs 2.17E-03 2.81E-03 4.43E-03 7.21E-03 1.33E-02

Pancreas 2.61E-03 3.32E-03 5.24E-03 8.33E-03 1.50E-02

Prostate 2.37E-03 2.79E-03 4.47E-03 7.39E-03 1.34E-02

Salivary Glands 2.10E-03 2.70E-03 4.42E-03 7.53E-03 1.40E-02

Red Marrow 1.94E-03 2.42E-03 3.90E-03 6.35E-03 1.29E-02

Osteogenic Cells 1.62E-03 2.06E-03 3.10E-03 4.67E-03 8.53E-03

Spleen 2.45E-03 3.13E-03 4.88E-03 8.09E-03 1.45E-02

Testes 2.02E-03 2.54E-03 4.07E-03 6.91E-03 1.32E-02

Thymus 2.16E-03 2.78E-03 4.41E-03 7.23E-03 1.33E-02

Thyroid 2.12E-03 2.73E-03 4.46E-03 7.51E-03 1.44E-02

Urinary Bladder Wall 2.34E-03 2.76E-03 4.43E-03 7.79E-03 1.36E-02

Total Body 2.16E-03 2.72E-03 4.45E-03 7.15E-03 1.32E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.77E-03 4.10E-03 6.21E-03 9.58E-03 1.72E-02

Brain 2.30E-03 2.45E-03 4.00E-03 6.65E-03 1.21E-02

Breasts 2.23E-03 2.40E-03 ----- ----- -----

Esophagus 2.64E-03 3.01E-03 4.75E-03 7.71E-03 1.42E-02

Eyes 2.30E-03 2.45E-03 4.00E-03 6.65E-03 1.21E-02

Gallbladder Wall 3.37E-03 3.60E-03 5.47E-03 8.15E-03 1.42E-02

Left colon 3.01E-03 2.99E-03 4.81E-03 7.55E-03 1.34E-02

Small Intestine 2.85E-03 3.25E-03 5.05E-03 8.00E-03 1.44E-02

Stomach Wall 2.95E-03 3.06E-03 4.67E-03 7.45E-03 1.33E-02

Right colon 3.06E-03 3.18E-03 4.97E-03 7.99E-03 1.43E-02

Rectum 2.89E-03 2.86E-03 4.66E-03 7.34E-03 1.30E-02

Heart Wall 2.89E-03 3.07E-03 4.80E-03 7.52E-03 1.35E-02

Kidneys 1.15E-02 1.29E-02 1.71E-02 2.72E-02 4.21E-02

Liver 6.28E-03 6.59E-03 9.81E-03 1.41E-02 2.36E-02

Lungs 2.70E-03 2.88E-03 4.42E-03 6.97E-03 1.28E-02

Ovaries 2.93E-03 3.15E-03 4.89E-03 7.79E-03 1.41E-02

Pancreas 3.37E-03 3.59E-03 5.50E-03 8.62E-03 1.52E-02

Salivary Glands 2.42E-03 2.78E-03 4.42E-03 7.28E-03 1.34E-02

Red Marrow 2.36E-03 2.48E-03 3.31E-03 5.03E-03 9.75E-03

Osteogenic Cells 1.88E-03 2.06E-03 2.46E-03 3.02E-03 4.60E-03

Spleen 3.09E-03 3.29E-03 4.99E-03 8.11E-03 1.45E-02

Thymus 2.67E-03 2.85E-03 4.41E-03 7.00E-03 1.29E-02

Thyroid 2.44E-03 2.80E-03 4.45E-03 7.33E-03 1.34E-02

Urinary Bladder Wall 2.48E-03 2.83E-03 4.42E-03 7.31E-03 1.24E-02

Uterus 2.91E-03 3.16E-03 4.89E-03 7.77E-03 1.41E-02

Total Body 2.67E-03 2.81E-03 4.45E-03 7.14E-03 1.32E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.58E-03 4.24E-03 6.47E-03 1.01E-02 1.80E-02

Brain 2.09E-03 2.41E-03 4.00E-03 6.66E-03 1.21E-02

Breasts 2.23E-03 2.40E-03 ----- ----- -----

Esophagus 2.44E-03 2.96E-03 4.73E-03 7.91E-03 1.47E-02

Eyes 2.09E-03 2.41E-03 4.00E-03 6.78E-03 1.24E-02

Gallbladder Wall 3.19E-03 3.64E-03 5.55E-03 8.36E-03 1.47E-02

Left colon 2.75E-03 2.98E-03 4.86E-03 7.69E-03 1.37E-02

Small Intestine 2.67E-03 3.20E-03 5.03E-03 8.08E-03 1.48E-02

Stomach Wall 2.69E-03 3.03E-03 4.68E-03 7.51E-03 1.34E-02

Right colon 2.80E-03 3.16E-03 4.99E-03 8.05E-03 1.43E-02

Rectum 2.63E-03 2.83E-03 4.66E-03 7.53E-03 1.35E-02

Heart Wall 2.65E-03 3.07E-03 4.86E-03 7.63E-03 1.37E-02

Kidneys 1.09E-02 1.27E-02 1.71E-02 2.72E-02 4.22E-02

Liver 5.61E-03 6.60E-03 9.79E-03 1.41E-02 2.36E-02

Lungs 2.44E-03 2.84E-03 4.42E-03 7.09E-03 1.30E-02

Ovaries 2.93E-03 3.15E-03 4.89E-03 7.79E-03 1.41E-02

Pancreas 2.99E-03 3.45E-03 5.37E-03 8.47E-03 1.51E-02

Prostate 2.37E-03 2.79E-03 4.47E-03 7.39E-03 1.34E-02

Salivary Glands 2.26E-03 2.74E-03 4.42E-03 7.41E-03 1.37E-02

Red Marrow 2.15E-03 2.45E-03 3.60E-03 5.69E-03 1.13E-02

Osteogenic Cells 1.75E-03 2.06E-03 2.78E-03 3.85E-03 6.56E-03

Spleen 2.77E-03 3.21E-03 4.94E-03 8.10E-03 1.45E-02

Testes 2.02E-03 2.54E-03 4.07E-03 6.91E-03 1.32E-02

Thymus 2.41E-03 2.82E-03 4.41E-03 7.12E-03 1.31E-02

Thyroid 2.28E-03 2.77E-03 4.46E-03 7.42E-03 1.39E-02

Urinary Bladder Wall 2.41E-03 2.80E-03 4.42E-03 7.55E-03 1.30E-02

Uterus 2.91E-03 3.16E-03 4.89E-03 7.77E-03 1.41E-02

Total Body 2.42E-03 2.76E-03 4.45E-03 7.14E-03 1.32E-02

Effective Dose 2.42E-03 2.78E-03 4.04E-03 6.45E-03 1.16E-02

Radiation Dose Estimates (mSv/MBq) for 13N Ammonia

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.89E-03 3.69E-03 5.87E-03 9.80E-03 1.83E-02

Brain 5.02E-03 5.17E-03 5.45E-03 6.22E-03 8.76E-03

Esophagus 2.54E-03 3.28E-03 5.38E-03 9.45E-03 1.79E-02

Eyes 2.42E-03 3.01E-03 4.82E-03 8.10E-03 1.46E-02

Gallbladder Wall 1.76E-02 2.21E-02 3.67E-02 6.14E-02 1.12E-01

Left colon 3.12E-03 3.70E-03 6.22E-03 9.90E-03 1.77E-02

Small Intestine 6.80E-03 8.47E-03 1.39E-02 2.09E-02 3.23E-02

Stomach Wall 2.75E-03 3.42E-03 5.43E-03 8.90E-03 1.62E-02

Right colon 4.14E-03 5.16E-03 8.24E-03 1.28E-02 2.12E-02

Rectum 3.87E-03 4.68E-03 7.92E-03 1.25E-02 2.16E-02

Heart Wall 2.71E-03 3.47E-03 5.63E-03 9.01E-03 1.65E-02

Kidneys 2.76E-03 3.51E-03 5.58E-03 9.39E-03 1.70E-02

Liver 2.85E-03 3.64E-03 5.72E-03 9.45E-03 1.70E-02

Lungs 2.44E-03 3.17E-03 5.06E-03 8.37E-03 1.56E-02

Pancreas 3.06E-03 3.88E-03 6.21E-03 1.00E-02 1.81E-02

Prostate 4.27E-03 5.19E-03 1.19E-02 1.27E-02 2.08E-02

Salivary Glands 2.67E-03 3.38E-03 5.34E-03 8.82E-03 1.63E-02

Red Marrow 2.43E-03 3.06E-03 4.77E-03 7.73E-03 1.57E-02

Osteogenic Cells 2.04E-03 2.55E-03 3.75E-03 5.69E-03 1.05E-02

Spleen 2.67E-03 3.41E-03 5.41E-03 9.18E-03 1.67E-02

Testes 2.73E-03 3.46E-03 6.28E-03 9.24E-03 1.73E-02

Thymus 2.50E-03 3.23E-03 5.19E-03 8.55E-03 1.59E-02

Thyroid 2.51E-03 3.23E-03 5.29E-03 8.96E-03 1.73E-02

Urinary Bladder Wall 3.35E-02 4.23E-02 6.46E-02 9.83E-02 1.77E-01

Total Body 2.79E-03 3.51E-03 5.79E-03 9.33E-03 1.72E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.56E-03 3.83E-03 5.95E-03 9.45E-03 1.72E-02

Brain 5.64E-03 5.53E-03 6.12E-03 6.75E-03 8.73E-03

Breasts 2.59E-03 2.80E-03 ----- ----- -----

Esophagus 2.91E-03 3.35E-03 5.35E-03 8.79E-03 1.63E-02

Eyes 2.98E-03 3.19E-03 4.91E-03 7.76E-03 1.38E-02

Gallbladder Wall 2.08E-02 2.34E-02 3.66E-02 6.07E-02 1.11E-01

Left colon 3.84E-03 3.90E-03 6.34E-03 9.73E-03 1.73E-02

Small Intestine 8.14E-03 8.65E-03 1.40E-02 1.03E-02 1.84E-02

Stomach Wall 3.40E-03 3.54E-03 5.44E-03 8.62E-03 1.56E-02

Right colon 4.67E-03 5.15E-03 8.18E-03 9.58E-03 1.68E-02

Rectum 5.82E-03 6.82E-03 9.84E-03 1.44E-02 2.41E-02

Heart Wall 3.32E-03 3.52E-03 5.56E-03 8.76E-03 1.60E-02

Kidneys 3.46E-03 3.70E-03 5.72E-03 9.22E-03 1.67E-02

Liver 3.39E-03 3.62E-03 5.56E-03 9.05E-03 1.65E-02

Lungs 3.05E-03 3.25E-03 5.03E-03 7.99E-03 1.49E-02

Ovaries 4.57E-03 5.16E-03 7.37E-03 1.24E-02 2.23E-02

Pancreas 3.80E-03 4.07E-03 6.31E-03 9.67E-03 1.77E-02

Salivary Glands 3.06E-03 3.50E-03 5.40E-03 8.56E-03 1.55E-02

Red Marrow 2.94E-03 3.08E-03 4.07E-03 6.08E-03 1.16E-02

Osteogenic Cells 2.36E-03 2.55E-03 3.00E-03 3.64E-03 5.46E-03

Spleen 3.31E-03 3.53E-03 5.45E-03 8.86E-03 1.61E-02

Thymus 3.11E-03 3.31E-03 5.16E-03 8.21E-03 1.54E-02

Thyroid 2.89E-03 3.32E-03 5.28E-03 8.68E-03 1.60E-02

Urinary Bladder Wall 3.99E-02 4.05E-02 6.11E-02 9.55E-02 1.76E-01

Uterus 5.97E-03 7.26E-03 1.17E-02 1.68E-02 2.76E-02

Total Body 3.46E-03 3.62E-03 5.76E-03 9.09E-03 1.69E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.23E-03 3.76E-03 5.91E-03 9.63E-03 1.77E-02

Brain 5.33E-03 5.35E-03 5.79E-03 6.48E-03 8.75E-03

Breasts 2.59E-03 2.80E-03 ----- ----- -----

Esophagus 2.72E-03 3.32E-03 5.36E-03 9.12E-03 1.71E-02

Eyes 2.70E-03 3.10E-03 4.86E-03 7.93E-03 1.42E-02

Gallbladder Wall 1.92E-02 2.27E-02 3.67E-02 6.11E-02 1.11E-01

Left colon 3.48E-03 3.80E-03 6.28E-03 9.81E-03 1.75E-02

Small Intestine 7.47E-03 8.56E-03 1.40E-02 1.56E-02 2.54E-02

Stomach Wall 3.08E-03 3.48E-03 5.44E-03 8.76E-03 1.59E-02

Right colon 4.41E-03 5.15E-03 8.21E-03 1.12E-02 1.90E-02

Rectum 4.85E-03 5.75E-03 8.88E-03 1.35E-02 2.29E-02

Heart Wall 3.01E-03 3.50E-03 5.59E-03 8.88E-03 1.62E-02

Kidneys 3.11E-03 3.60E-03 5.65E-03 9.30E-03 1.69E-02

Liver 3.12E-03 3.63E-03 5.64E-03 9.25E-03 1.68E-02

Lungs 2.74E-03 3.21E-03 5.05E-03 8.18E-03 1.53E-02

Ovaries 4.57E-03 5.16E-03 7.37E-03 1.24E-02 2.23E-02

Pancreas 3.43E-03 3.98E-03 6.26E-03 9.85E-03 1.79E-02

Prostate 4.27E-03 5.19E-03 1.19E-02 1.27E-02 2.08E-02

Salivary Glands 2.87E-03 3.44E-03 5.37E-03 8.69E-03 1.59E-02

Red Marrow 2.69E-03 3.07E-03 4.42E-03 6.91E-03 1.37E-02

Osteogenic Cells 2.20E-03 2.55E-03 3.37E-03 4.66E-03 7.99E-03

Spleen 2.99E-03 3.47E-03 5.43E-03 9.02E-03 1.64E-02

Testes 2.73E-03 3.46E-03 6.28E-03 9.24E-03 1.73E-02

Thymus 2.81E-03 3.27E-03 5.17E-03 8.38E-03 1.56E-02

Thyroid 2.70E-03 3.28E-03 5.29E-03 8.82E-03 1.67E-02

Urinary Bladder Wall 3.67E-02 4.14E-02 6.28E-02 9.69E-02 1.77E-01

Uterus 5.97E-03 7.26E-03 1.17E-02 1.68E-02 2.76E-02

Total Body 3.12E-03 3.57E-03 5.77E-03 9.21E-03 1.71E-02

Effective Dose 4.38E-03 5.01E-03 7.47E-03 1.16E-02 2.12E-02

Radiation Dose Estimates (mSv/MBq) for 14C Urea

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adults - Normal Case\* Adults - Helicobacter positive\*\*

|  |  |  |  |
| --- | --- | --- | --- |
| Adrenals | 2.22E-02 |  | 7.11E-02 |
| Brain | 2.22E-02 |  | 7.11E-02 |
| Esophagus | 2.22E-02 |  | 7.11E-02 |
| Eyes | 2.22E-02 |  | 7.11E-02 |
| Gallbladder Wall | 2.22E-02 |  | 7.11E-02 |
| Left colon | 2.22E-02 |  | 7.11E-02 |
| Small Intestine | 2.22E-02 |  | 7.11E-02 |
| Stomach Wall | 2.91E-02 |  | 7.80E-02 |
| Right colon | 2.22E-02 |  | 7.11E-02 |
| Rectum | 2.22E-02 |  | 7.11E-02 |
| Heart Wall | 2.22E-02 |  | 7.11E-02 |
| Kidneys | 2.22E-02 |  | 7.11E-02 |
| Liver | 2.22E-02 |  | 7.11E-02 |
| Lungs | 2.22E-02 |  | 7.11E-02 |
| Pancreas | 2.22E-02 |  | 7.11E-02 |
| Prostate | 2.22E-02 |  | 7.11E-02 |
| Salivary Glands | 2.22E-02 |  | 7.11E-02 |
| Red Marrow | 1.76E-02 |  | 5.65E-02 |
| Osteogenic Cells | 4.04E-02 |  | 1.37E-01 |
| Spleen | 2.22E-02 |  | 7.11E-02 |
| Testes | 2.22E-02 |  | 7.11E-02 |
| Thymus | 2.22E-02 |  | 7.11E-02 |
| Thyroid | 2.22E-02 |  | 7.11E-02 |
| Urinary Bladder Wall | 1.24E-01 |  | 1.06E-01 |
| Total Body | 2.54E-02 |  | 8.03E-02 |

Females

Adults - Normal Case\* Adults - Helicobacter positive\*\*

|  |  |  |  |
| --- | --- | --- | --- |
| Adrenals | 2.22E-02 |  | 8.65E-02 |
| Brain | 2.22E-02 |  | 8.65E-02 |
| Esophagus | 2.22E-02 |  | 8.65E-02 |
| Eyes | 2.22E-02 |  | 8.65E-02 |
| Gallbladder Wall | 2.22E-02 |  | 8.65E-02 |
| Left colon | 2.22E-02 |  | 8.65E-02 |
| Small Intestine | 2.22E-02 |  | 8.65E-02 |
| Stomach Wall | 2.91E-02 |  | 8.65E-02 |
| Right colon | 2.22E-02 |  | 9.40E-02 |
| Rectum | 2.22E-02 |  | 8.65E-02 |
| Heart Wall | 2.22E-02 |  | 8.65E-02 |
| Kidneys | 2.22E-02 |  | 8.65E-02 |
| Liver | 2.22E-02 |  | 8.65E-02 |
| Lungs | 2.22E-02 |  | 8.65E-02 |
| Pancreas | 2.22E-02 |  | 8.65E-02 |
| Prostate | 2.22E-02 |  | 8.65E-02 |
| Salivary Glands | 2.22E-02 |  | 8.65E-02 |
| Red Marrow | 1.76E-02 |  | 8.65E-02 |
| Osteogenic Cells | 4.04E-02 |  | 6.89E-02 |
| Spleen | 2.22E-02 |  | 1.31E-01 |
| Testes | 2.22E-02 |  | 8.65E-02 |
| Thymus | 2.22E-02 |  | 8.65E-02 |
| Thyroid | 2.22E-02 |  | 8.65E-02 |
| Urinary Bladder Wall | 1.24E-01 |  | 1.33E-01 |
| Total Body | 2.54E-02 |  | 8.65E-02 |

Gender Average

Adults - Normal Case\* Adults - Helicobacter positive\*\*

|  |  |  |  |
| --- | --- | --- | --- |
| Adrenals | 2.22E-02 |  | 7.88E-02 |
| Brain | 2.22E-02 |  | 7.88E-02 |
| Esophagus | 2.22E-02 |  | 8.65E-02 |
| Eyes | 2.22E-02 |  | 7.88E-02 |
| Gallbladder Wall | 2.22E-02 |  | 7.88E-02 |
| Left colon | 2.22E-02 |  | 7.88E-02 |
| Small Intestine | 2.22E-02 |  | 7.88E-02 |
| Stomach Wall | 2.91E-02 |  | 7.88E-02 |
| Right colon | 2.22E-02 |  | 8.60E-02 |
| Rectum | 2.22E-02 |  | 7.88E-02 |
| Heart Wall | 2.22E-02 |  | 7.88E-02 |
| Kidneys | 2.22E-02 |  | 7.88E-02 |
| Liver | 2.22E-02 |  | 7.88E-02 |
| Lungs | 2.22E-02 |  | 7.88E-02 |
| Pancreas | 2.22E-02 |  | 7.88E-02 |
| Prostate | 2.22E-02 |  | 8.65E-02 |
| Salivary Glands | 2.22E-02 |  | 7.88E-02 |
| Red Marrow | 1.76E-02 |  | 7.11E-02 |
| Osteogenic Cells | 4.04E-02 |  | 7.88E-02 |
| Spleen | 2.22E-02 |  | 6.27E-02 |
| Testes | 2.22E-02 |  | 1.34E-01 |
| Thymus | 2.22E-02 |  | 7.88E-02 |
| Thyroid | 2.22E-02 |  | 7.11E-02 |
| Urinary Bladder Wall | 1.24E-01 |  | 7.88E-02 |
| Total Body | 2.54E-02 |  | 7.88E-02 |
|  |  |  |  |
| Effective Dose | 2.59E-02 |  | 7.18E-02 |

\* Intravenous or oral administration

\*\* Oral administration

Radiation Dose Estimates (mSv/MBq) for 15O Water

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.64E-03 2.24E-03 3.17E-03 4.56E-03 6.38E-03

Brain 1.30E-03 1.34E-03 1.37E-03 1.50E-03 2.07E-03

Esophagus 4.06E-04 5.26E-04 8.57E-04 1.50E-03 2.84E-03

Eyes 2.84E-04 3.57E-04 5.68E-04 1.01E-03 1.82E-03

Gallbladder Wall 5.50E-04 6.77E-04 1.04E-03 1.65E-03 3.04E-03

Left colon 1.33E-03 1.65E-03 2.79E-03 4.08E-03 5.81E-03

Small Intestine 1.53E-03 1.91E-03 3.19E-03 4.66E-03 6.64E-03

Stomach Wall 8.63E-04 1.09E-03 1.78E-03 2.67E-03 4.07E-03

Right colon 1.31E-03 1.63E-03 2.70E-03 3.94E-03 5.53E-03

Rectum 7.59E-04 9.38E-04 1.58E-03 2.43E-03 3.72E-03

Heart Wall 1.86E-03 2.44E-03 4.09E-03 6.67E-03 1.40E-02

Kidneys 1.64E-03 2.03E-03 2.79E-03 4.50E-03 7.01E-03

Liver 1.65E-03 2.23E-03 3.37E-03 4.87E-03 8.15E-03

Lungs 1.26E-03 1.65E-03 2.84E-03 4.62E-03 8.85E-03

Pancreas 1.07E-03 1.34E-03 2.28E-03 3.74E-03 6.39E-03

Prostate 3.07E-04 3.78E-04 6.31E-04 1.03E-03 1.96E-03

Salivary Glands 3.09E-04 3.92E-04 6.34E-04 1.10E-03 2.03E-03

Red Marrow 6.01E-04 7.16E-04 1.21E-03 2.26E-03 5.45E-03

Osteogenic Cells 5.14E-04 6.58E-04 1.03E-03 1.67E-03 3.72E-03

Spleen 1.82E-03 2.11E-03 3.34E-03 5.26E-03 8.89E-03

Testes 2.52E-04 3.22E-04 5.33E-04 1.05E-03 1.95E-03

Thymus 3.90E-04 5.10E-04 7.81E-04 1.39E-03 2.64E-03

Thyroid 1.38E-03 2.20E-03 3.25E-03 7.09E-03 1.18E-02

Urinary Bladder Wall 2.97E-04 3.64E-04 6.00E-04 1.14E-03 2.06E-03

Total Body 4.05E-04 5.16E-04 8.71E-04 1.43E-03 2.67E-03

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.89E-03 2.48E-03 1.07E-03 4.69E-03 6.62E-03

Brain 1.46E-03 1.44E-03 1.55E-03 1.65E-03 2.08E-03

Breasts 3.29E-04 3.63E-04 ----- ----- -----

Esophagus 4.96E-04 5.58E-04 8.77E-04 1.40E-03 2.65E-03

Eyes 3.56E-04 3.92E-04 5.97E-04 9.42E-04 1.65E-03

Gallbladder Wall 5.29E-04 5.75E-04 8.77E-04 1.31E-03 2.36E-03

Left colon 1.34E-03 1.65E-03 2.74E-03 3.96E-03 5.56E-03

Small Intestine 1.87E-03 1.92E-03 3.18E-03 4.58E-03 6.41E-03

Stomach Wall 9.64E-04 1.07E-03 1.71E-03 2.55E-03 3.81E-03

Right colon 1.32E-03 1.64E-03 2.69E-03 3.91E-03 5.57E-03

Rectum 7.89E-04 9.38E-04 1.57E-03 2.31E-03 3.43E-03

Heart Wall 2.44E-03 2.76E-03 4.95E-03 6.61E-03 1.09E-02

Kidneys 1.86E-03 2.11E-03 2.80E-03 4.47E-03 6.95E-03

Liver 2.08E-03 2.22E-03 3.36E-03 4.83E-03 8.13E-03

Lungs 1.57E-03 1.92E-03 2.80E-03 4.50E-03 8.55E-03

Ovaries 3.91E-04 4.27E-04 6.72E-04 1.08E-03 1.97E-03

Pancreas 1.26E-03 1.46E-03 2.31E-03 3.78E-03 6.31E-03

Salivary Glands 3.59E-04 4.09E-04 6.47E-04 1.01E-03 1.81E-03

Red Marrow 7.54E-04 7.41E-04 1.14E-03 2.12E-03 5.11E-03

Osteogenic Cells 5.50E-04 6.57E-04 9.64E-04 1.50E-03 3.31E-03

Spleen 2.13E-03 2.15E-03 3.35E-03 5.28E-03 8.86E-03

Thymus 5.16E-04 5.59E-04 8.45E-04 1.36E-03 2.48E-03

Thyroid 1.61E-03 2.20E-03 3.25E-03 6.85E-03 1.19E-02

Urinary Bladder Wall 3.31E-04 3.80E-04 6.83E-04 9.92E-04 1.72E-03

Uterus 3.99E-04 4.45E-04 7.01E-04 1.12E-03 2.01E-03

Total Body 5.22E-04 5.41E-04 8.72E-04 1.43E-03 2.67E-03

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.76E-03 2.36E-03 2.12E-03 4.63E-03 6.50E-03

Brain 1.38E-03 1.39E-03 1.46E-03 1.58E-03 2.08E-03

Breasts 3.29E-04 3.63E-04 ----- ----- -----

Esophagus 4.51E-04 5.42E-04 8.67E-04 1.45E-03 2.75E-03

Eyes 3.20E-04 3.75E-04 5.83E-04 9.77E-04 1.74E-03

Gallbladder Wall 5.39E-04 6.26E-04 9.57E-04 1.48E-03 2.70E-03

Left colon 1.34E-03 1.65E-03 2.76E-03 4.02E-03 5.69E-03

Small Intestine 1.70E-03 1.92E-03 3.19E-03 4.62E-03 6.52E-03

Stomach Wall 9.13E-04 1.08E-03 1.74E-03 2.61E-03 3.94E-03

Right colon 1.31E-03 1.63E-03 2.70E-03 3.93E-03 5.55E-03

Rectum 7.74E-04 9.38E-04 1.58E-03 2.37E-03 3.57E-03

Heart Wall 2.15E-03 2.60E-03 4.52E-03 6.64E-03 1.24E-02

Kidneys 1.75E-03 2.07E-03 2.80E-03 4.48E-03 6.98E-03

Liver 1.86E-03 2.22E-03 3.37E-03 4.85E-03 8.14E-03

Lungs 1.42E-03 1.79E-03 2.82E-03 4.56E-03 8.70E-03

Ovaries 3.91E-04 4.27E-04 6.72E-04 1.08E-03 1.97E-03

Pancreas 1.16E-03 1.40E-03 2.29E-03 3.76E-03 6.35E-03

Prostate 3.07E-04 3.78E-04 6.31E-04 1.03E-03 1.96E-03

Salivary Glands 3.34E-04 4.01E-04 6.41E-04 1.06E-03 1.92E-03

Red Marrow 6.78E-04 7.29E-04 1.17E-03 2.19E-03 5.28E-03

Osteogenic Cells 5.32E-04 6.57E-04 9.96E-04 1.59E-03 3.52E-03

Spleen 1.98E-03 2.13E-03 3.34E-03 5.27E-03 8.88E-03

Testes 2.52E-04 3.22E-04 5.33E-04 1.05E-03 1.95E-03

Thymus 4.53E-04 5.34E-04 8.13E-04 1.38E-03 2.56E-03

Thyroid 1.50E-03 2.20E-03 3.25E-03 6.97E-03 1.18E-02

Urinary Bladder Wall 3.14E-04 3.72E-04 6.41E-04 1.07E-03 1.89E-03

Uterus 3.99E-04 4.45E-04 7.01E-04 1.12E-03 2.01E-03

Total Body 4.63E-04 5.28E-04 8.71E-04 1.43E-03 2.67E-03

Effective Dose 8.76E-04 1.06E-03 1.63E-03 2.65E-03 4.63E-03

Radiation Dose Estimates (mSv/MBq) for 18F Choline

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.83E-02 3.61E-02 5.21E-02 7.67E-02 1.27E-01

Brain 8.28E-03 1.04E-02 1.74E-02 2.89E-02 5.20E-02

Esophagus 1.29E-02 1.68E-02 2.68E-02 4.20E-02 7.61E-02

Eyes 8.29E-03 1.04E-02 1.74E-02 2.96E-02 5.34E-02

Gallbladder Wall 2.51E-02 3.02E-02 4.29E-02 6.23E-02 1.04E-01

Left colon 1.39E-02 1.69E-02 2.72E-02 4.14E-02 7.15E-02

Small Intestine 1.38E-02 1.73E-02 2.71E-02 4.23E-02 7.38E-02

Stomach Wall 1.41E-02 1.75E-02 2.67E-02 4.13E-02 7.07E-02

Right colon 1.53E-02 1.88E-02 2.97E-02 4.56E-02 7.70E-02

Rectum 1.35E-02 1.59E-02 2.65E-02 4.06E-02 6.70E-02

Heart Wall 1.41E-02 1.80E-02 2.80E-02 4.23E-02 7.41E-02

Kidneys 9.21E-02 1.13E-01 1.53E-01 2.41E-01 3.70E-01

Liver 5.99E-02 7.95E-02 1.17E-01 1.65E-01 2.70E-01

Lungs 1.20E-02 1.55E-02 2.37E-02 3.65E-02 6.51E-02

Pancreas 1.61E-02 2.04E-02 3.13E-02 4.77E-02 8.43E-02

Prostate 1.46E-02 1.72E-02 3.45E-02 4.17E-02 6.53E-02

Salivary Glands 9.59E-03 1.23E-02 1.99E-02 3.30E-02 6.03E-02

Red Marrow 1.07E-02 1.31E-02 1.97E-02 2.92E-02 5.59E-02

Osteogenic Cells 9.15E-03 1.11E-02 1.62E-02 2.36E-02 4.19E-02

Spleen 3.53E-02 4.15E-02 6.34E-02 9.81E-02 1.64E-01

Testes 9.80E-03 1.23E-02 2.08E-02 3.02E-02 5.56E-02

Thymus 1.08E-02 1.40E-02 2.15E-02 3.48E-02 6.39E-02

Thyroid 1.01E-02 1.29E-02 2.08E-02 3.41E-02 6.33E-02

Urinary Bladder Wall 5.88E-02 7.27E-02 1.10E-01 1.61E-01 2.24E-01

Total Body 1.14E-02 1.43E-02 2.31E-02 3.64E-02 6.56E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.12E-02 3.51E-02 5.04E-02 7.20E-02 1.24E-01

Brain 1.02E-02 1.07E-02 1.74E-02 2.91E-02 5.22E-02

Breasts 1.07E-02 1.14E-02 ----- ----- -----

Esophagus 1.59E-02 1.78E-02 2.76E-02 4.33E-02 8.03E-02

Eyes 1.02E-02 1.07E-02 1.74E-02 2.89E-02 5.20E-02

Gallbladder Wall 2.46E-02 2.64E-02 3.85E-02 5.44E-02 9.27E-02

Left colon 1.65E-02 1.64E-02 2.59E-02 4.00E-02 6.94E-02

Small Intestine 1.61E-02 1.81E-02 2.75E-02 4.26E-02 7.47E-02

Stomach Wall 1.72E-02 1.77E-02 2.63E-02 4.08E-02 7.02E-02

Right colon 1.72E-02 1.79E-02 2.82E-02 4.43E-02 7.62E-02

Rectum 1.87E-02 2.04E-02 3.03E-02 4.52E-02 7.48E-02

Heart Wall 1.55E-02 1.63E-02 2.51E-02 3.86E-02 6.85E-02

Kidneys 1.03E-01 1.17E-01 1.53E-01 2.41E-01 3.70E-01

Liver 7.54E-02 7.97E-02 1.18E-01 1.66E-01 2.72E-01

Lungs 1.49E-02 1.58E-02 2.34E-02 3.58E-02 6.34E-02

Ovaries 1.63E-02 1.80E-02 2.62E-02 4.31E-02 7.57E-02

Pancreas 2.31E-02 2.45E-02 3.66E-02 5.51E-02 9.12E-02

Salivary Glands 1.09E-02 1.26E-02 1.98E-02 3.26E-02 5.92E-02

Red Marrow 1.31E-02 1.30E-02 1.58E-02 2.18E-02 3.83E-02

Osteogenic Cells 1.07E-02 1.10E-02 1.24E-02 1.45E-02 2.03E-02

Spleen 4.22E-02 4.26E-02 6.46E-02 1.00E-01 1.67E-01

Thymus 1.32E-02 1.43E-02 2.15E-02 3.37E-02 6.14E-02

Thyroid 1.14E-02 1.31E-02 2.06E-02 3.36E-02 6.10E-02

Urinary Bladder Wall 6.69E-02 6.88E-02 1.03E-01 1.61E-01 2.76E-01

Uterus 1.90E-02 2.22E-02 3.50E-02 5.18E-02 8.57E-02

Total Body 1.50E-02 1.47E-02 2.30E-02 3.64E-02 5.16E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.98E-02 3.56E-02 5.13E-02 7.44E-02 1.25E-01

Brain 9.23E-03 1.05E-02 1.74E-02 2.90E-02 5.21E-02

Breasts 1.07E-02 1.14E-02 ----- ----- -----

Esophagus 1.44E-02 1.73E-02 2.72E-02 4.27E-02 7.82E-02

Eyes 9.24E-03 1.06E-02 1.74E-02 2.92E-02 5.27E-02

Gallbladder Wall 2.49E-02 2.83E-02 4.07E-02 5.84E-02 9.82E-02

Left colon 1.52E-02 1.67E-02 2.65E-02 4.07E-02 7.05E-02

Small Intestine 1.49E-02 1.77E-02 2.73E-02 4.25E-02 7.43E-02

Stomach Wall 1.56E-02 1.76E-02 2.65E-02 4.10E-02 7.04E-02

Right colon 1.62E-02 1.84E-02 2.89E-02 4.49E-02 7.66E-02

Rectum 1.61E-02 1.81E-02 2.84E-02 4.29E-02 7.09E-02

Heart Wall 1.48E-02 1.72E-02 2.66E-02 4.04E-02 7.13E-02

Kidneys 9.78E-02 1.15E-01 1.53E-01 2.41E-01 3.70E-01

Liver 6.77E-02 7.96E-02 1.18E-01 1.65E-01 2.71E-01

Lungs 1.35E-02 1.56E-02 2.36E-02 3.62E-02 6.42E-02

Ovaries 1.63E-02 1.80E-02 2.62E-02 4.31E-02 7.57E-02

Pancreas 1.96E-02 2.24E-02 3.39E-02 5.14E-02 8.78E-02

Prostate 1.46E-02 1.72E-02 3.45E-02 4.17E-02 6.53E-02

Salivary Glands 1.03E-02 1.25E-02 1.99E-02 3.28E-02 5.97E-02

Red Marrow 1.19E-02 1.31E-02 1.78E-02 2.55E-02 4.71E-02

Osteogenic Cells 9.92E-03 1.10E-02 1.43E-02 1.90E-02 3.11E-02

Spleen 3.87E-02 4.20E-02 6.40E-02 9.92E-02 1.66E-01

Testes 9.80E-03 1.23E-02 2.08E-02 3.02E-02 5.56E-02

Thymus 1.20E-02 1.42E-02 2.15E-02 3.42E-02 6.26E-02

Thyroid 1.08E-02 1.30E-02 2.07E-02 3.38E-02 6.21E-02

Urinary Bladder Wall 6.29E-02 7.08E-02 1.07E-01 1.61E-01 2.50E-01

Uterus 1.90E-02 2.22E-02 3.50E-02 5.18E-02 8.57E-02

Total Body 1.32E-02 1.45E-02 2.30E-02 3.64E-02 6.59E-02

Effective Dose 1.77E-02 2.03E-02 2.92E-02 4.40E-02 7.47E-02

Radiation Dose Estimates (mSv/MBq) for 18F FDG

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.23E-02 1.58E-02 2.38E-02 3.81E-02 6.71E-02

Brain 3.56E-02 3.65E-02 3.78E-02 4.21E-02 5.79E-02

Esophagus 1.27E-02 1.62E-02 2.59E-02 4.19E-02 7.69E-02

Eyes 1.03E-02 1.26E-02 1.88E-02 2.93E-02 5.12E-02

Gallbladder Wall 1.40E-02 1.68E-02 2.53E-02 3.74E-02 6.41E-02

Left colon 1.13E-02 1.33E-02 2.20E-02 3.40E-02 5.96E-02

Small Intestine 1.22E-02 1.54E-02 2.46E-02 3.85E-02 6.72E-02

Stomach Wall 1.24E-02 1.54E-02 2.35E-02 3.68E-02 6.40E-02

Right colon 1.17E-02 1.44E-02 2.23E-02 3.50E-02 6.10E-02

Rectum 1.57E-02 1.89E-02 3.21E-02 4.70E-02 7.23E-02

Heart Wall 6.34E-02 8.72E-02 1.40E-01 2.24E-01 3.79E-01

Kidneys 1.07E-02 1.36E-02 2.11E-02 3.42E-02 6.04E-02

Liver 2.19E-02 2.90E-02 4.25E-02 6.15E-02 1.02E-01

Lungs 1.76E-02 2.29E-02 3.74E-02 5.90E-02 1.11E-01

Pancreas 1.26E-02 1.60E-02 2.50E-02 3.90E-02 7.07E-02

Prostate 1.82E-02 2.20E-02 5.49E-02 4.95E-02 6.94E-02

Salivary Glands 1.14E-02 1.42E-02 2.16E-02 3.34E-02 5.85E-02

Red Marrow 1.04E-02 1.28E-02 1.86E-02 2.77E-02 5.27E-02

Osteogenic Cells 9.20E-03 1.09E-02 1.54E-02 2.27E-02 4.06E-02

Spleen 1.01E-02 1.29E-02 2.01E-02 3.31E-02 5.91E-02

Testes 1.02E-02 1.29E-02 2.44E-02 3.10E-02 5.52E-02

Thymus 1.33E-02 1.72E-02 2.48E-02 4.00E-02 7.04E-02

Thyroid 1.01E-02 1.28E-02 2.07E-02 3.37E-02 6.15E-02

Urinary Bladder Wall 1.36E-01 1.69E-01 2.55E-01 3.47E-01 4.62E-01

Total Body 1.09E-02 1.36E-02 2.21E-02 3.49E-02 6.25E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.51E-02 1.62E-02 2.43E-02 3.76E-02 6.68E-02

Brain 3.96E-02 3.91E-02 4.25E-02 4.58E-02 5.79E-02

Breasts 1.01E-02 1.09E-02 ----- ----- -----

Esophagus 1.54E-02 1.75E-02 2.71E-02 4.31E-02 7.81E-02

Eyes 1.29E-02 1.41E-02 2.00E-02 3.02E-02 5.00E-02

Gallbladder Wall 1.43E-02 1.52E-02 2.32E-02 3.40E-02 5.92E-02

Left colon 1.55E-02 1.57E-02 2.47E-02 3.88E-02 6.71E-02

Small Intestine 1.38E-02 1.57E-02 2.43E-02 3.82E-02 6.68E-02

Stomach Wall 1.38E-02 1.42E-02 2.14E-02 3.39E-02 5.95E-02

Right colon 1.43E-02 1.48E-02 2.28E-02 3.57E-02 6.07E-02

Rectum 2.56E-02 3.09E-02 4.31E-02 6.23E-02 9.65E-02

Heart Wall 8.21E-02 9.18E-02 1.90E-01 2.23E-01 2.11E-01

Kidneys 1.30E-02 1.38E-02 2.09E-02 3.39E-02 6.01E-02

Liver 2.71E-02 2.84E-02 4.19E-02 6.03E-02 1.01E-01

Lungs 2.21E-02 2.59E-02 3.73E-02 5.86E-02 1.10E-01

Ovaries 1.82E-02 2.08E-02 2.84E-02 5.04E-02 8.67E-02

Pancreas 1.51E-02 1.60E-02 2.45E-02 3.81E-02 6.72E-02

Salivary Glands 1.29E-02 1.47E-02 2.21E-02 3.33E-02 5.75E-02

Red Marrow 1.23E-02 1.23E-02 1.49E-02 2.05E-02 3.53E-02

Osteogenic Cells 1.08E-02 1.08E-02 1.20E-02 1.36E-02 1.90E-02

Spleen 1.26E-02 1.34E-02 2.02E-02 3.31E-02 5.92E-02

Thymus 1.58E-02 1.68E-02 2.50E-02 3.81E-02 6.64E-02

Thyroid 1.15E-02 1.33E-02 2.07E-02 3.34E-02 5.96E-02

Urinary Bladder Wall 1.56E-01 1.58E-01 2.35E-01 3.65E-01 6.01E-01

Uterus 2.59E-02 3.24E-02 5.27E-02 7.52E-02 1.13E-01

Total Body 1.41E-02 1.40E-02 2.20E-02 3.50E-02 6.41E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.37E-02 1.60E-02 2.40E-02 3.78E-02 6.69E-02

Brain 3.76E-02 3.78E-02 4.02E-02 4.39E-02 5.79E-02

Breasts 1.01E-02 1.09E-02 ----- ----- -----

Esophagus 1.41E-02 1.69E-02 2.65E-02 4.25E-02 7.75E-02

Eyes 1.16E-02 1.34E-02 1.94E-02 2.98E-02 5.06E-02

Gallbladder Wall 1.42E-02 1.60E-02 2.42E-02 3.57E-02 6.17E-02

Left colon 1.34E-02 1.45E-02 2.34E-02 3.64E-02 6.33E-02

Small Intestine 1.30E-02 1.55E-02 2.45E-02 3.84E-02 6.70E-02

Stomach Wall 1.31E-02 1.48E-02 2.25E-02 3.54E-02 6.18E-02

Right colon 1.30E-02 1.46E-02 2.25E-02 3.54E-02 6.08E-02

Rectum 2.06E-02 2.49E-02 3.76E-02 5.46E-02 8.44E-02

Heart Wall 7.28E-02 8.95E-02 1.65E-01 2.24E-01 2.95E-01

Kidneys 1.18E-02 1.37E-02 2.10E-02 3.41E-02 6.03E-02

Liver 2.45E-02 2.87E-02 4.22E-02 6.09E-02 1.01E-01

Lungs 1.99E-02 2.44E-02 3.73E-02 5.88E-02 1.11E-01

Ovaries 1.82E-02 2.08E-02 2.84E-02 5.04E-02 8.67E-02

Pancreas 1.39E-02 1.60E-02 2.47E-02 3.85E-02 6.89E-02

Prostate 1.82E-02 2.20E-02 5.49E-02 4.95E-02 6.94E-02

Salivary Glands 1.21E-02 1.44E-02 2.19E-02 3.34E-02 5.80E-02

Red Marrow 1.13E-02 1.26E-02 1.67E-02 2.41E-02 4.40E-02

Osteogenic Cells 1.00E-02 1.09E-02 1.37E-02 1.81E-02 2.98E-02

Spleen 1.14E-02 1.31E-02 2.02E-02 3.31E-02 5.91E-02

Testes 1.02E-02 1.29E-02 2.44E-02 3.10E-02 5.52E-02

Thymus 1.46E-02 1.70E-02 2.49E-02 3.91E-02 6.84E-02

Thyroid 1.08E-02 1.31E-02 2.07E-02 3.35E-02 6.06E-02

Urinary Bladder Wall 1.46E-01 1.63E-01 2.45E-01 3.56E-01 5.31E-01

Uterus 2.59E-02 3.24E-02 5.27E-02 7.52E-02 1.13E-01

Total Body 1.25E-02 1.38E-02 2.21E-02 3.50E-02 6.33E-02

Effective Dose 1.92E-02 2.20E-02 3.23E-02 4.82E-02 8.01E-02

Radiation Dose Estimates (mSv/MBq) for 18F Fluoride

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.39E-03 8.35E-03 1.18E-02 1.89E-02 3.69E-02

Brain 6.32E-03 7.24E-03 1.07E-02 1.59E-02 2.38E-02

Esophagus 4.84E-03 5.63E-03 8.01E-03 1.23E-02 2.02E-02

Eyes 6.33E-03 7.24E-03 1.07E-02 1.61E-02 2.40E-02

Gallbladder Wall 3.93E-03 4.70E-03 7.41E-03 1.11E-02 2.09E-02

Left colon 5.46E-03 6.32E-03 1.03E-02 1.50E-02 2.67E-02

Small Intestine 5.82E-03 7.26E-03 1.10E-02 1.57E-02 3.03E-02

Stomach Wall 3.50E-03 4.35E-03 7.32E-03 1.03E-02 1.90E-02

Right colon 4.55E-03 5.52E-03 8.42E-03 1.23E-02 2.27E-02

Rectum 1.12E-02 1.39E-02 2.22E-02 2.77E-02 5.34E-02

Heart Wall 4.12E-03 5.03E-03 7.66E-03 1.17E-02 2.14E-02

Kidneys 4.64E-03 6.18E-03 9.38E-03 1.43E-02 2.90E-02

Liver 3.86E-03 4.95E-03 7.33E-03 1.15E-02 2.18E-02

Lungs 4.36E-03 5.55E-03 8.28E-03 1.30E-02 2.52E-02

Pancreas 4.72E-03 5.84E-03 8.68E-03 1.33E-02 2.51E-02

Prostate 1.29E-02 1.59E-02 4.40E-02 2.67E-02 4.68E-02

Salivary Glands 4.77E-03 5.56E-03 7.88E-03 1.22E-02 1.98E-02

Red Marrow 3.56E-02 4.56E-02 8.85E-02 2.10E-01 4.74E-01

Osteogenic Cells 9.25E-02 1.19E-01 1.91E-01 3.29E-01 7.52E-01

Spleen 3.85E-03 5.08E-03 7.82E-03 1.23E-02 2.42E-02

Testes 5.51E-03 6.99E-03 1.43E-02 1.35E-02 2.61E-02

Thymus 3.64E-03 4.67E-03 7.06E-03 1.09E-02 2.08E-02

Thyroid 4.79E-03 5.58E-03 7.92E-03 1.22E-02 2.01E-02

Urinary Bladder Wall 1.44E-01 1.80E-01 2.45E-01 2.73E-01 6.88E-01

Total Body 9.25E-03 1.15E-02 1.81E-02 2.73E-02 5.18E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.14E-03 8.35E-03 1.19E-02 1.89E-02 3.65E-02

Brain 7.24E-03 7.28E-03 1.07E-02 1.59E-02 2.37E-02

Breasts 3.36E-03 3.58E-03 ----- ----- -----

Esophagus 5.58E-03 5.70E-03 8.04E-03 1.23E-02 1.99E-02

Eyes 7.25E-03 7.29E-03 1.07E-02 1.59E-02 2.38E-02

Gallbladder Wall 4.81E-03 5.04E-03 7.86E-03 1.16E-02 2.15E-02

Left colon 7.15E-03 7.52E-03 1.24E-02 1.90E-02 3.25E-02

Small Intestine 7.06E-03 7.54E-03 1.14E-02 1.69E-02 2.90E-02

Stomach Wall 4.43E-03 4.43E-03 7.38E-03 1.05E-02 1.90E-02

Right colon 5.30E-03 5.32E-03 8.58E-03 1.30E-02 2.26E-02

Rectum 2.10E-02 2.74E-02 3.64E-02 4.68E-02 7.40E-02

Heart Wall 4.91E-03 5.06E-03 7.64E-03 1.16E-02 2.12E-02

Kidneys 5.82E-03 6.14E-03 9.36E-03 1.44E-02 2.87E-02

Liver 4.84E-03 4.99E-03 7.36E-03 1.16E-02 2.17E-02

Lungs 5.48E-03 5.59E-03 8.27E-03 1.29E-02 2.49E-02

Ovaries 1.19E-02 1.42E-02 1.72E-02 3.06E-02 5.52E-02

Pancreas 5.69E-03 5.98E-03 8.87E-03 1.35E-02 2.54E-02

Salivary Glands 5.53E-03 5.62E-03 7.90E-03 1.21E-02 1.96E-02

Red Marrow 4.56E-02 4.80E-02 8.78E-02 1.82E-01 4.71E-01

Osteogenic Cells 9.46E-02 1.19E-01 1.91E-01 3.18E-01 7.48E-01

Spleen 4.83E-03 5.16E-03 7.89E-03 1.24E-02 2.40E-02

Thymus 4.59E-03 4.70E-03 7.04E-03 1.08E-02 2.06E-02

Thyroid 5.53E-03 5.61E-03 7.88E-03 1.21E-02 1.96E-02

Urinary Bladder Wall 1.67E-01 1.68E-01 2.49E-01 3.46E-01 6.42E-01

Uterus 2.01E-02 2.65E-02 4.38E-02 5.46E-02 8.32E-02

Total Body 1.14E-02 1.17E-02 1.83E-02 2.80E-02 5.16E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.27E-03 8.35E-03 1.19E-02 1.89E-02 3.67E-02

Brain 6.78E-03 7.26E-03 1.07E-02 1.59E-02 2.38E-02

Breasts 3.36E-03 3.58E-03 ----- ----- -----

Esophagus 5.21E-03 5.66E-03 8.02E-03 1.23E-02 2.01E-02

Eyes 6.79E-03 7.26E-03 1.07E-02 1.60E-02 2.39E-02

Gallbladder Wall 4.37E-03 4.87E-03 7.63E-03 1.14E-02 2.12E-02

Left colon 6.31E-03 6.92E-03 1.13E-02 1.70E-02 2.96E-02

Small Intestine 6.44E-03 7.40E-03 1.12E-02 1.63E-02 2.96E-02

Stomach Wall 3.96E-03 4.39E-03 7.35E-03 1.04E-02 1.90E-02

Right colon 4.92E-03 5.42E-03 8.50E-03 1.26E-02 2.26E-02

Rectum 1.61E-02 2.07E-02 2.93E-02 3.73E-02 6.37E-02

Heart Wall 4.51E-03 5.04E-03 7.65E-03 1.17E-02 2.13E-02

Kidneys 5.23E-03 6.16E-03 9.37E-03 1.43E-02 2.89E-02

Liver 4.35E-03 4.97E-03 7.34E-03 1.15E-02 2.17E-02

Lungs 4.92E-03 5.57E-03 8.28E-03 1.30E-02 2.50E-02

Ovaries 1.19E-02 1.42E-02 1.72E-02 3.06E-02 5.52E-02

Pancreas 5.21E-03 5.91E-03 8.77E-03 1.34E-02 2.52E-02

Prostate 1.29E-02 1.59E-02 4.40E-02 2.67E-02 4.68E-02

Salivary Glands 5.15E-03 5.59E-03 7.89E-03 1.22E-02 1.97E-02

Red Marrow 4.06E-02 4.68E-02 8.81E-02 1.96E-01 4.73E-01

Osteogenic Cells 9.35E-02 1.19E-01 1.91E-01 3.24E-01 7.50E-01

Spleen 4.34E-03 5.12E-03 7.85E-03 1.23E-02 2.41E-02

Testes 5.51E-03 6.99E-03 1.43E-02 1.35E-02 2.61E-02

Thymus 4.11E-03 4.69E-03 7.05E-03 1.09E-02 2.07E-02

Thyroid 5.16E-03 5.60E-03 7.90E-03 1.22E-02 1.98E-02

Urinary Bladder Wall 1.56E-01 1.74E-01 2.47E-01 3.10E-01 6.65E-01

Uterus 2.01E-02 2.65E-02 4.38E-02 5.46E-02 8.32E-02

Total Body 1.03E-02 1.16E-02 1.82E-02 2.76E-02 5.17E-02

Effective Dose 1.65E-02 1.89E-02 2.99E-02 5.04E-02 1.12E-01

Radiation Dose Estimates (mSv/MBq) for 18F L-DOPA

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.10E-02 1.39E-02 2.11E-02 3.35E-02 5.83E-02

Brain 6.82E-03 8.58E-03 1.43E-02 2.37E-02 4.26E-02

Esophagus 8.04E-03 1.03E-02 1.66E-02 2.75E-02 5.08E-02

Eyes 6.84E-03 8.57E-03 1.43E-02 2.43E-02 4.39E-02

Gallbladder Wall 9.84E-03 1.17E-02 1.83E-02 2.76E-02 4.78E-02

Left colon 1.06E-02 1.21E-02 1.97E-02 2.93E-02 5.03E-02

Small Intestine 1.29E-02 1.61E-02 2.58E-02 3.87E-02 6.32E-02

Stomach Wall 8.91E-03 1.09E-02 1.69E-02 2.69E-02 4.73E-02

Right colon 1.07E-02 1.32E-02 2.02E-02 3.08E-02 5.25E-02

Rectum 2.22E-02 2.75E-02 4.69E-02 6.45E-02 8.81E-02

Heart Wall 8.65E-03 1.10E-02 1.75E-02 2.72E-02 4.83E-02

Kidneys 2.39E-02 2.93E-02 4.01E-02 6.36E-02 9.86E-02

Liver 8.85E-03 1.13E-02 1.73E-02 2.81E-02 4.94E-02

Lungs 7.68E-03 9.94E-03 1.55E-02 2.45E-02 4.49E-02

Pancreas 9.73E-03 1.23E-02 1.93E-02 3.03E-02 5.33E-02

Prostate 2.83E-02 3.48E-02 1.02E-01 7.11E-02 8.51E-02

Salivary Glands 7.83E-03 1.01E-02 1.62E-02 2.69E-02 4.91E-02

Red Marrow 9.53E-03 1.19E-02 1.70E-02 2.48E-02 4.64E-02

Osteogenic Cells 7.75E-03 9.34E-03 1.33E-02 1.94E-02 3.41E-02

Spleen 9.10E-03 1.16E-02 1.79E-02 2.90E-02 5.09E-02

Testes 1.20E-02 1.53E-02 3.35E-02 3.44E-02 5.56E-02

Thymus 7.90E-03 1.02E-02 1.59E-02 2.52E-02 4.64E-02

Thyroid 7.87E-03 1.01E-02 1.63E-02 2.69E-02 5.02E-02

Urinary Bladder Wall 3.00E-01 3.74E-01 5.65E-01 7.58E-01 9.96E-01

Total Body 1.03E-02 1.28E-02 2.07E-02 3.16E-02 5.31E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.24E-02 1.33E-02 2.01E-02 3.16E-02 5.50E-02

Brain 8.39E-03 8.80E-03 1.43E-02 2.37E-02 4.26E-02

Breasts 7.91E-03 8.41E-03 ----- ----- -----

Esophagus 9.13E-03 1.06E-02 1.67E-02 2.73E-02 4.90E-02

Eyes 8.40E-03 8.82E-03 1.44E-02 2.38E-02 4.27E-02

Gallbladder Wall 1.21E-02 1.30E-02 1.98E-02 2.93E-02 4.92E-02

Left colon 1.39E-02 1.46E-02 2.37E-02 3.80E-02 5.80E-02

Small Intestine 1.50E-02 1.68E-02 2.58E-02 3.98E-02 6.07E-02

Stomach Wall 1.10E-02 1.13E-02 1.70E-02 2.72E-02 4.70E-02

Right colon 1.25E-02 1.29E-02 2.02E-02 3.18E-02 5.24E-02

Rectum 4.22E-02 5.53E-02 7.30E-02 1.02E-01 1.16E-01

Heart Wall 1.07E-02 1.12E-02 1.74E-02 2.70E-02 4.78E-02

Kidneys 2.69E-02 2.99E-02 3.98E-02 6.33E-02 9.77E-02

Liver 1.09E-02 1.15E-02 1.73E-02 2.82E-02 4.93E-02

Lungs 9.64E-03 1.02E-02 1.54E-02 2.41E-02 4.40E-02

Ovaries 2.47E-02 2.97E-02 3.69E-02 7.03E-02 9.51E-02

Pancreas 1.22E-02 1.29E-02 1.98E-02 3.09E-02 5.37E-02

Salivary Glands 8.93E-03 1.03E-02 1.63E-02 2.66E-02 4.83E-02

Red Marrow 1.13E-02 1.15E-02 1.39E-02 1.90E-02 3.21E-02

Osteogenic Cells 8.82E-03 9.13E-03 1.03E-02 1.19E-02 1.66E-02

Spleen 1.14E-02 1.21E-02 1.82E-02 2.94E-02 5.08E-02

Thymus 9.84E-03 1.04E-02 1.58E-02 2.49E-02 4.57E-02

Thyroid 8.93E-03 1.03E-02 1.62E-02 2.66E-02 4.82E-02

Urinary Bladder Wall 3.46E-01 3.49E-01 5.18E-01 8.00E-01 9.30E-01

Uterus 4.28E-02 5.66E-02 9.39E-02 1.29E-01 1.39E-01

Total Body 1.28E-02 1.30E-02 2.04E-02 3.21E-02 5.28E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.17E-02 1.36E-02 2.06E-02 3.25E-02 5.66E-02

Brain 7.61E-03 8.69E-03 1.43E-02 2.37E-02 4.26E-02

Breasts 7.91E-03 8.41E-03 0.00E+00 0.00E+00 0.00E+00

Esophagus 8.58E-03 1.04E-02 1.67E-02 2.74E-02 4.99E-02

Eyes 7.62E-03 8.70E-03 1.43E-02 2.40E-02 4.33E-02

Gallbladder Wall 1.10E-02 1.23E-02 1.91E-02 2.85E-02 4.85E-02

Left colon 1.22E-02 1.33E-02 2.17E-02 3.37E-02 5.42E-02

Small Intestine 1.39E-02 1.65E-02 2.58E-02 3.92E-02 6.19E-02

Stomach Wall 9.97E-03 1.11E-02 1.69E-02 2.70E-02 4.72E-02

Right colon 1.16E-02 1.31E-02 2.02E-02 3.13E-02 5.24E-02

Rectum 3.22E-02 4.14E-02 6.00E-02 8.31E-02 1.02E-01

Heart Wall 9.66E-03 1.11E-02 1.74E-02 2.71E-02 4.81E-02

Kidneys 2.54E-02 2.96E-02 4.00E-02 6.35E-02 9.81E-02

Liver 9.87E-03 1.14E-02 1.73E-02 2.82E-02 4.94E-02

Lungs 8.66E-03 1.00E-02 1.54E-02 2.43E-02 4.45E-02

Ovaries 2.47E-02 2.97E-02 3.69E-02 7.03E-02 9.51E-02

Pancreas 1.09E-02 1.26E-02 1.95E-02 3.06E-02 5.35E-02

Prostate 2.83E-02 3.48E-02 1.02E-01 7.11E-02 8.51E-02

Salivary Glands 8.38E-03 1.02E-02 1.62E-02 2.67E-02 4.87E-02

Red Marrow 1.04E-02 1.17E-02 1.54E-02 2.19E-02 3.92E-02

Osteogenic Cells 8.28E-03 9.24E-03 1.18E-02 1.57E-02 2.53E-02

Spleen 1.02E-02 1.18E-02 1.80E-02 2.92E-02 5.09E-02

Testes 1.20E-02 1.53E-02 3.35E-02 3.44E-02 5.56E-02

Thymus 8.87E-03 1.03E-02 1.59E-02 2.50E-02 4.61E-02

Thyroid 8.40E-03 1.02E-02 1.63E-02 2.67E-02 4.92E-02

Urinary Bladder Wall 3.23E-01 3.62E-01 5.42E-01 7.79E-01 9.63E-01

Uterus 4.28E-02 5.66E-02 9.39E-02 1.29E-01 1.39E-01

Total Body 1.15E-02 1.29E-02 2.05E-02 3.19E-02 5.29E-02

Effective Dose 2.30E-02 2.61E-02 3.85E-02 5.67E-02 8.05E-02

Radiation Dose Estimates (mSv/MBq) for 32P Phosphate

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.14E-01 9.30E-01 1.63E+00 3.10E+00 6.12E+00

Brain 7.14E-01 9.30E-01 1.63E+00 2.75E+00 5.24E+00

Esophagus 7.14E-01 9.30E-01 1.63E+00 3.39E+00 6.80E+00

Eyes 7.14E-01 9.30E-01 1.63E+00 3.18E+00 5.94E+00

Gallbladder Wall 7.14E-01 9.30E-01 1.63E+00 2.88E+00 5.86E+00

Left colon 7.14E-01 9.30E-01 1.63E+00 2.96E+00 5.83E+00

Small Intestine 7.14E-01 9.30E-01 1.63E+00 3.03E+00 6.26E+00

Stomach Wall 7.14E-01 9.30E-01 1.63E+00 2.90E+00 5.58E+00

Right colon 7.14E-01 9.30E-01 1.63E+00 2.87E+00 5.45E+00

Rectum 7.14E-01 9.30E-01 1.63E+00 3.17E+00 6.32E+00

Heart Wall 7.14E-01 9.30E-01 1.63E+00 2.83E+00 5.46E+00

Kidneys 7.14E-01 9.30E-01 1.63E+00 2.95E+00 5.60E+00

Liver 7.14E-01 9.30E-01 1.63E+00 2.82E+00 5.39E+00

Lungs 7.14E-01 9.30E-01 1.63E+00 3.06E+00 5.90E+00

Pancreas 7.14E-01 9.30E-01 1.63E+00 2.88E+00 5.50E+00

Prostate 7.14E-01 9.30E-01 1.63E+00 2.78E+00 6.05E+00

Salivary Glands 7.14E-01 9.30E-01 1.63E+00 3.10E+00 6.07E+00

Red Marrow 7.73E+00 1.01E+01 2.15E+01 4.78E+01 1.29E+02

Osteogenic Cells 1.65E+01 2.17E+01 3.56E+01 6.08E+01 1.46E+02

Spleen 7.14E-01 9.30E-01 1.63E+00 2.97E+00 5.71E+00

Testes 7.14E-01 9.30E-01 1.63E+00 3.53E+00 6.55E+00

Thymus 7.14E-01 9.30E-01 1.63E+00 3.05E+00 5.60E+00

Thyroid 7.14E-01 9.30E-01 1.63E+00 3.29E+00 6.78E+00

Urinary Bladder Wall 7.14E-01 9.30E-01 1.63E+00 3.36E+00 6.62E+00

Total Body 1.53E+00 1.99E+00 3.49E+00 5.87E+00 1.12E+01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Brain 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Breasts 8.68E-01 9.83E-01 ----- ----- -----

Esophagus 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Eyes 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Gallbladder Wall 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Left colon 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Small Intestine 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Stomach Wall 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Right colon 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Rectum 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Heart Wall 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Kidneys 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Liver 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Lungs 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Ovaries 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Pancreas 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Salivary Glands 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Red Marrow 9.99E+00 1.09E+01 2.15E+01 4.78E+01 1.29E+02

Osteogenic Cells 1.65E+01 2.17E+01 3.56E+01 6.08E+01 1.46E+02

Spleen 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Thymus 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Thyroid 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Urinary Bladder Wall 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Uterus 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Total Body 1.86E+00 2.10E+00 3.49E+00 5.87E+00 1.12E+01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.91E-01 9.57E-01 1.63E+00 2.92E+00 5.67E+00

Brain 7.91E-01 9.57E-01 1.63E+00 2.75E+00 5.22E+00

Breasts 8.68E-01 9.83E-01 ----- ----- -----

Esophagus 7.91E-01 9.57E-01 1.63E+00 3.06E+00 6.00E+00

Eyes 7.91E-01 9.57E-01 1.63E+00 2.96E+00 5.57E+00

Gallbladder Wall 7.91E-01 9.57E-01 1.63E+00 2.81E+00 5.53E+00

Left colon 7.91E-01 9.57E-01 1.63E+00 2.85E+00 5.52E+00

Small Intestine 7.91E-01 9.57E-01 1.63E+00 2.89E+00 5.73E+00

Stomach Wall 7.91E-01 9.57E-01 1.63E+00 2.82E+00 5.40E+00

Right colon 7.91E-01 9.57E-01 1.63E+00 2.80E+00 5.33E+00

Rectum 7.91E-01 9.57E-01 1.63E+00 2.96E+00 5.77E+00

Heart Wall 7.91E-01 9.57E-01 1.63E+00 2.79E+00 5.33E+00

Kidneys 7.91E-01 9.57E-01 1.63E+00 2.85E+00 5.41E+00

Liver 7.91E-01 9.57E-01 1.63E+00 2.78E+00 5.30E+00

Lungs 7.91E-01 9.57E-01 1.63E+00 2.90E+00 5.55E+00

Ovaries 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Pancreas 7.91E-01 9.57E-01 1.63E+00 2.81E+00 5.36E+00

Prostate 7.14E-01 9.30E-01 1.63E+00 2.78E+00 6.05E+00

Salivary Glands 7.91E-01 9.57E-01 1.63E+00 2.92E+00 5.64E+00

Red Marrow 8.86E+00 1.05E+01 2.15E+01 4.78E+01 1.29E+02

Osteogenic Cells 1.65E+01 2.17E+01 3.56E+01 6.08E+01 1.46E+02

Spleen 7.91E-01 9.57E-01 1.63E+00 2.86E+00 5.46E+00

Testes 7.14E-01 9.30E-01 1.63E+00 3.53E+00 6.55E+00

Thymus 7.91E-01 9.57E-01 1.63E+00 2.89E+00 5.40E+00

Thyroid 7.91E-01 9.57E-01 1.63E+00 3.01E+00 5.99E+00

Urinary Bladder Wall 7.91E-01 9.57E-01 1.63E+00 3.05E+00 5.91E+00

Uterus 8.68E-01 9.83E-01 1.63E+00 2.74E+00 5.21E+00

Total Body 1.69E+00 2.05E+00 3.49E+00 5.87E+00 1.12E+01

Effective Dose 1.89E+00 2.28E+00 4.21E+00 8.66E+00 2.16E+01

Radiation Dose Estimates (mSv/MBq) for 51Cr RBCs

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.68E-01 2.07E-01 2.99E-01 4.34E-01 8.07E-01

Brain 7.05E-02 8.76E-02 1.45E-01 2.39E-01 4.12E-01

Esophagus 9.83E-02 1.26E-01 1.96E-01 3.06E-01 5.39E-01

Eyes 7.05E-02 8.76E-02 1.45E-01 2.39E-01 4.12E-01

Gallbladder Wall 1.19E-01 1.49E-01 2.29E-01 3.22E-01 4.60E-01

Left colon 1.22E-01 1.43E-01 2.17E-01 3.20E-01 5.46E-01

Small Intestine 1.10E-01 1.38E-01 2.08E-01 3.20E-01 5.57E-01

Stomach Wall 1.33E-01 1.66E-01 2.50E-01 3.73E-01 6.05E-01

Right colon 1.07E-01 1.31E-01 1.96E-01 3.13E-01 5.13E-01

Rectum 1.02E-01 1.19E-01 1.92E-01 2.88E-01 5.01E-01

Heart Wall 1.03E-01 1.31E-01 1.99E-01 2.90E-01 5.08E-01

Kidneys 1.31E-01 1.61E-01 2.36E-01 3.60E-01 6.09E-01

Liver 1.28E-01 1.67E-01 2.42E-01 3.37E-01 5.61E-01

Lungs 9.05E-02 1.16E-01 1.73E-01 2.58E-01 4.62E-01

Pancreas 1.29E-01 1.61E-01 2.39E-01 3.62E-01 6.13E-01

Prostate 1.01E-01 1.24E-01 1.81E-01 2.83E-01 4.57E-01

Salivary Glands 8.53E-02 1.09E-01 1.71E-01 2.78E-01 4.98E-01

Red Marrow 1.00E-01 1.19E-01 1.79E-01 2.69E-01 4.80E-01

Osteogenic Cells 1.03E-01 1.24E-01 1.77E-01 2.62E-01 4.93E-01

Spleen 1.26E+00 1.44E+00 2.21E+00 3.35E+00 5.53E+00

Testes 7.88E-02 9.66E-02 1.46E-01 2.27E-01 4.07E-01

Thymus 8.86E-02 1.13E-01 1.68E-01 2.61E-01 4.66E-01

Thyroid 8.71E-02 1.11E-01 1.74E-01 2.82E-01 5.05E-01

Urinary Bladder Wall 9.94E-02 1.23E-01 1.78E-01 2.79E-01 4.53E-01

Total Body 8.60E-02 1.05E-01 1.63E-01 2.56E-01 4.55E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.18E-01 3.20E-01 4.48E-01 6.50E-01 1.05E+00

Brain 8.69E-02 8.91E-02 1.45E-01 2.57E-01 4.40E-01

Breasts 8.06E-02 8.44E-02 ----- ----- -----

Esophagus 1.09E-01 1.27E-01 1.95E-01 3.09E-01 5.46E-01

Eyes 8.69E-02 8.91E-02 1.45E-01 2.39E-01 4.12E-01

Gallbladder Wall 1.38E-01 1.48E-01 2.27E-01 3.21E-01 4.63E-01

Left colon 1.54E-01 1.52E-01 2.24E-01 3.31E-01 5.64E-01

Small Intestine 1.26E-01 1.43E-01 2.13E-01 3.28E-01 5.67E-01

Stomach Wall 1.86E-01 1.91E-01 2.78E-01 4.09E-01 6.40E-01

Right colon 1.30E-01 1.31E-01 1.89E-01 3.05E-01 5.02E-01

Rectum 1.24E-01 1.20E-01 1.91E-01 2.86E-01 4.98E-01

Heart Wall 1.28E-01 1.32E-01 2.00E-01 2.93E-01 5.13E-01

Kidneys 1.68E-01 1.74E-01 2.48E-01 3.80E-01 6.36E-01

Liver 1.62E-01 1.65E-01 2.43E-01 3.38E-01 5.64E-01

Lungs 1.14E-01 1.17E-01 1.71E-01 2.58E-01 4.60E-01

Ovaries 1.27E-01 1.33E-01 1.98E-01 3.07E-01 5.42E-01

Pancreas 1.67E-01 1.75E-01 2.54E-01 3.84E-01 6.38E-01

Salivary Glands 9.29E-02 1.10E-01 1.70E-01 2.78E-01 4.98E-01

Red Marrow 1.20E-01 1.19E-01 1.42E-01 1.86E-01 2.90E-01

Osteogenic Cells 1.18E-01 1.23E-01 1.36E-01 1.58E-01 2.37E-01

Spleen 1.44E+00 1.44E+00 2.21E+00 3.35E+00 5.51E+00

Thymus 1.10E-01 1.14E-01 1.68E-01 2.60E-01 4.63E-01

Thyroid 9.43E-02 1.12E-01 1.73E-01 2.81E-01 5.03E-01

Urinary Bladder Wall 1.10E-01 1.24E-01 1.78E-01 2.79E-01 4.53E-01

Uterus 1.25E-01 1.34E-01 2.05E-01 3.13E-01 5.42E-01

Total Body 1.07E-01 1.07E-01 1.63E-01 2.56E-01 4.54E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.43E-01 2.64E-01 3.73E-01 5.42E-01 9.28E-01

Brain 7.87E-02 8.84E-02 1.45E-01 2.48E-01 4.26E-01

Breasts 8.06E-02 8.44E-02 ----- ----- -----

Esophagus 1.04E-01 1.27E-01 1.95E-01 3.08E-01 5.43E-01

Eyes 7.87E-02 8.84E-02 1.45E-01 2.39E-01 4.12E-01

Gallbladder Wall 1.28E-01 1.49E-01 2.28E-01 3.22E-01 4.61E-01

Left colon 1.38E-01 1.47E-01 2.20E-01 3.26E-01 5.55E-01

Small Intestine 1.18E-01 1.40E-01 2.10E-01 3.24E-01 5.62E-01

Stomach Wall 1.60E-01 1.79E-01 2.64E-01 3.91E-01 6.23E-01

Right colon 1.18E-01 1.31E-01 1.93E-01 3.09E-01 5.08E-01

Rectum 1.13E-01 1.20E-01 1.91E-01 2.87E-01 5.00E-01

Heart Wall 1.16E-01 1.32E-01 2.00E-01 2.92E-01 5.11E-01

Kidneys 1.49E-01 1.67E-01 2.42E-01 3.70E-01 6.23E-01

Liver 1.45E-01 1.66E-01 2.43E-01 3.38E-01 5.62E-01

Lungs 1.02E-01 1.17E-01 1.72E-01 2.58E-01 4.61E-01

Ovaries 1.27E-01 1.33E-01 1.98E-01 3.07E-01 5.42E-01

Pancreas 1.48E-01 1.68E-01 2.47E-01 3.73E-01 6.26E-01

Prostate 1.01E-01 1.24E-01 1.81E-01 2.83E-01 4.57E-01

Salivary Glands 8.91E-02 1.10E-01 1.71E-01 2.78E-01 4.98E-01

Red Marrow 1.10E-01 1.19E-01 1.60E-01 2.27E-01 3.85E-01

Osteogenic Cells 1.11E-01 1.23E-01 1.56E-01 2.10E-01 3.65E-01

Spleen 1.35E+00 1.44E+00 2.21E+00 3.35E+00 5.52E+00

Testes 7.88E-02 9.66E-02 1.46E-01 2.27E-01 4.07E-01

Thymus 9.95E-02 1.13E-01 1.68E-01 2.60E-01 4.65E-01

Thyroid 9.07E-02 1.11E-01 1.73E-01 2.81E-01 5.04E-01

Urinary Bladder Wall 1.04E-01 1.23E-01 1.78E-01 2.79E-01 4.53E-01

Uterus 1.25E-01 1.34E-01 2.05E-01 3.13E-01 5.42E-01

Total Body 9.66E-02 1.06E-01 1.63E-01 2.56E-01 4.55E-01

Effective Dose 1.17E-01 1.30E-01 1.85E-01 2.77E-01 4.67E-01

Radiation Dose Estimates (mSv/MBq) for 51Cr EDTA-IV-Normal Renal Function

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.60E-04 1.08E-03 1.57E-03 2.33E-03 3.88E-03

Brain 4.55E-04 5.66E-04 9.33E-04 1.53E-03 2.66E-03

Esophagus 5.67E-04 7.23E-04 1.14E-03 1.83E-03 3.24E-03

Eyes 4.56E-04 5.66E-04 9.32E-04 1.53E-03 2.66E-03

Gallbladder Wall 7.39E-04 9.31E-04 1.47E-03 2.10E-03 2.97E-03

Left colon 8.48E-04 9.80E-04 1.50E-03 2.13E-03 3.48E-03

Small Intestine 1.13E-03 1.41E-03 2.19E-03 3.06E-03 4.46E-03

Stomach Wall 6.44E-04 7.96E-04 1.22E-03 1.86E-03 3.04E-03

Right colon 8.62E-04 1.07E-03 1.53E-03 2.26E-03 3.53E-03

Rectum 2.30E-03 2.93E-03 4.80E-03 5.83E-03 7.01E-03

Heart Wall 6.19E-04 7.85E-04 1.21E-03 1.78E-03 3.13E-03

Kidneys 1.64E-03 2.00E-03 2.73E-03 4.17E-03 6.35E-03

Liver 6.47E-04 8.20E-04 1.26E-03 1.89E-03 3.25E-03

Lungs 5.36E-04 6.92E-04 1.04E-03 1.58E-03 2.84E-03

Pancreas 7.34E-04 9.20E-04 1.39E-03 2.14E-03 3.58E-03

Prostate 2.97E-03 3.70E-03 1.16E-02 6.51E-03 6.84E-03

Salivary Glands 5.48E-04 6.99E-04 1.09E-03 1.78E-03 3.19E-03

Red Marrow 8.44E-04 1.03E-03 1.38E-03 1.77E-03 2.79E-03

Osteogenic Cells 8.07E-04 9.17E-04 1.23E-03 1.68E-03 2.95E-03

Spleen 6.73E-04 8.53E-04 1.32E-03 1.96E-03 3.35E-03

Testes 1.04E-03 1.34E-03 3.02E-03 2.70E-03 3.75E-03

Thymus 5.54E-04 7.05E-04 1.06E-03 1.64E-03 2.93E-03

Thyroid 5.51E-04 7.04E-04 1.10E-03 1.79E-03 3.20E-03

Urinary Bladder Wall 2.31E-02 2.81E-02 4.14E-02 4.98E-02 5.55E-02

Total Body 7.79E-04 9.54E-04 1.49E-03 2.17E-03 3.38E-03

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 9.50E-04 1.01E-03 1.46E-03 2.23E-03 3.88E-03

Brain 5.62E-04 5.76E-04 9.33E-04 1.54E-03 2.66E-03

Breasts 5.07E-04 5.28E-04 ----- ----- -----

Esophagus 6.22E-04 7.38E-04 1.15E-03 1.84E-03 3.29E-03

Eyes 5.63E-04 5.78E-04 9.36E-04 1.54E-03 2.66E-03

Gallbladder Wall 9.75E-04 1.07E-03 1.63E-03 2.33E-03 3.39E-03

Left colon 1.16E-03 1.26E-03 1.99E-03 3.16E-03 4.99E-03

Small Intestine 1.32E-03 1.48E-03 2.20E-03 3.30E-03 4.91E-03

Stomach Wall 8.06E-04 8.24E-04 1.24E-03 1.92E-03 3.12E-03

Right colon 9.95E-04 1.01E-03 1.54E-03 2.43E-03 3.75E-03

Rectum 4.59E-03 6.16E-03 7.93E-03 1.06E-02 1.39E-02

Heart Wall 7.68E-04 7.91E-04 1.20E-03 1.78E-03 3.13E-03

Kidneys 1.84E-03 2.03E-03 2.69E-03 4.18E-03 6.46E-03

Liver 7.97E-04 8.32E-04 1.26E-03 1.91E-03 3.33E-03

Lungs 6.80E-04 7.00E-04 1.04E-03 1.58E-03 2.85E-03

Ovaries 2.46E-03 3.18E-03 3.88E-03 6.65E-03 1.03E-02

Pancreas 9.23E-04 9.75E-04 1.45E-03 2.23E-03 3.76E-03

Salivary Glands 6.00E-04 7.13E-04 1.10E-03 1.79E-03 3.20E-03

Red Marrow 9.74E-04 9.65E-04 1.07E-03 1.27E-03 1.66E-03

Osteogenic Cells 8.91E-04 8.84E-04 9.37E-04 1.03E-03 1.34E-03

Spleen 8.43E-04 8.84E-04 1.34E-03 2.02E-03 3.46E-03

Thymus 6.88E-04 7.11E-04 1.05E-03 1.64E-03 2.94E-03

Thyroid 6.00E-04 7.10E-04 1.10E-03 1.78E-03 3.20E-03

Urinary Bladder Wall 2.47E-02 2.50E-02 3.60E-02 5.40E-02 7.92E-02

Uterus 4.71E-03 6.24E-03 1.03E-02 1.38E-02 1.72E-02

Total Body 9.78E-04 9.56E-04 1.45E-03 2.25E-03 3.72E-03

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 9.05E-04 1.04E-03 1.52E-03 2.28E-03 3.88E-03

Brain 5.09E-04 5.71E-04 9.33E-04 1.54E-03 2.66E-03

Breasts 5.07E-04 5.28E-04 0.00E+00 0.00E+00 0.00E+00

Esophagus 5.94E-04 7.30E-04 1.14E-03 1.83E-03 3.27E-03

Eyes 5.10E-04 5.72E-04 9.34E-04 1.54E-03 2.66E-03

Gallbladder Wall 8.57E-04 9.99E-04 1.55E-03 2.21E-03 3.18E-03

Left colon 1.00E-03 1.12E-03 1.75E-03 2.65E-03 4.24E-03

Small Intestine 1.23E-03 1.44E-03 2.20E-03 3.18E-03 4.69E-03

Stomach Wall 7.25E-04 8.10E-04 1.23E-03 1.89E-03 3.08E-03

Right colon 9.29E-04 1.04E-03 1.54E-03 2.34E-03 3.64E-03

Rectum 3.45E-03 4.55E-03 6.36E-03 8.23E-03 1.04E-02

Heart Wall 6.93E-04 7.88E-04 1.21E-03 1.78E-03 3.13E-03

Kidneys 1.74E-03 2.01E-03 2.71E-03 4.18E-03 6.40E-03

Liver 7.22E-04 8.26E-04 1.26E-03 1.90E-03 3.29E-03

Lungs 6.08E-04 6.96E-04 1.04E-03 1.58E-03 2.84E-03

Ovaries 2.46E-03 3.18E-03 3.88E-03 6.65E-03 1.03E-02

Pancreas 8.29E-04 9.48E-04 1.42E-03 2.18E-03 3.67E-03

Prostate 2.97E-03 3.70E-03 1.16E-02 6.51E-03 6.84E-03

Salivary Glands 5.74E-04 7.06E-04 1.10E-03 1.78E-03 3.19E-03

Red Marrow 9.09E-04 9.96E-04 1.22E-03 1.52E-03 2.23E-03

Osteogenic Cells 8.49E-04 9.00E-04 1.08E-03 1.35E-03 2.15E-03

Spleen 7.58E-04 8.69E-04 1.33E-03 1.99E-03 3.40E-03

Testes 1.04E-03 1.34E-03 3.02E-03 2.70E-03 3.75E-03

Thymus 6.21E-04 7.08E-04 1.06E-03 1.64E-03 2.94E-03

Thyroid 5.75E-04 7.07E-04 1.10E-03 1.79E-03 3.20E-03

Urinary Bladder Wall 2.39E-02 2.65E-02 3.87E-02 5.19E-02 6.73E-02

Uterus 4.71E-03 6.24E-03 1.03E-02 1.38E-02 1.72E-02

Total Body 8.79E-04 9.55E-04 1.47E-03 2.21E-03 3.55E-03

Effective Dose 1.77E-03 2.00E-03 2.89E-03 3.97E-03 5.65E-03

Radiation Dose Estimates (mSv/MBq) for 51Cr EDTA-IV-Abnormal Renal Function

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 4.38E-03 5.46E-03 7.97E-03 1.20E-02 2.06E-02

Brain 2.65E-03 3.29E-03 5.42E-03 8.91E-03 1.54E-02

Esophagus 3.22E-03 4.11E-03 6.43E-03 1.04E-02 1.86E-02

Eyes 2.65E-03 3.29E-03 5.42E-03 8.91E-03 1.54E-02

Gallbladder Wall 3.99E-03 5.00E-03 7.86E-03 1.13E-02 1.62E-02

Left colon 4.01E-03 4.70E-03 7.41E-03 1.10E-02 1.88E-02

Small Intestine 4.26E-03 5.31E-03 8.06E-03 1.22E-02 2.07E-02

Stomach Wall 3.60E-03 4.42E-03 6.75E-03 1.03E-02 1.71E-02

Right colon 3.99E-03 4.90E-03 7.21E-03 1.15E-02 1.88E-02

Rectum 5.01E-03 6.06E-03 9.77E-03 1.38E-02 2.17E-02

Heart Wall 3.54E-03 4.47E-03 6.87E-03 1.01E-02 1.79E-02

Kidneys 7.40E-03 8.99E-03 1.21E-02 1.88E-02 2.95E-02

Liver 3.55E-03 4.47E-03 6.86E-03 1.03E-02 1.82E-02

Lungs 3.07E-03 3.95E-03 5.92E-03 8.99E-03 1.63E-02

Pancreas 4.01E-03 5.00E-03 7.49E-03 1.15E-02 2.00E-02

Prostate 5.46E-03 6.75E-03 1.44E-02 1.41E-02 2.02E-02

Salivary Glands 3.18E-03 4.06E-03 6.35E-03 1.03E-02 1.85E-02

Red Marrow 3.49E-03 4.23E-03 6.30E-03 9.12E-03 1.56E-02

Osteogenic Cells 3.69E-03 4.44E-03 6.34E-03 9.21E-03 1.69E-02

Spleen 3.67E-03 4.61E-03 7.06E-03 1.06E-02 1.85E-02

Testes 3.34E-03 4.14E-03 6.99E-03 9.44E-03 1.61E-02

Thymus 3.19E-03 4.05E-03 6.08E-03 9.42E-03 1.69E-02

Thyroid 3.19E-03 4.07E-03 6.36E-03 1.03E-02 1.85E-02

Urinary Bladder Wall 2.08E-02 2.53E-02 3.72E-02 4.96E-02 6.36E-02

Total Body 3.23E-03 3.94E-03 6.12E-03 9.51E-03 1.66E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.05E-03 5.24E-03 7.61E-03 1.16E-02 2.02E-02

Brain 3.27E-03 3.35E-03 5.42E-03 8.91E-03 1.54E-02

Breasts 2.92E-03 3.05E-03 ----- ----- -----

Esophagus 3.53E-03 4.17E-03 6.44E-03 1.04E-02 1.86E-02

Eyes 3.27E-03 3.35E-03 5.42E-03 8.92E-03 1.54E-02

Gallbladder Wall 4.94E-03 5.31E-03 8.20E-03 1.17E-02 1.69E-02

Left colon 4.96E-03 4.93E-03 7.75E-03 1.17E-02 2.00E-02

Small Intestine 4.77E-03 5.43E-03 8.08E-03 1.24E-02 2.10E-02

Stomach Wall 4.46E-03 4.52E-03 6.79E-03 1.04E-02 1.72E-02

Right colon 4.84E-03 4.91E-03 7.21E-03 1.16E-02 1.90E-02

Rectum 7.46E-03 8.49E-03 1.21E-02 1.71E-02 2.69E-02

Heart Wall 4.40E-03 4.52E-03 6.86E-03 1.01E-02 1.79E-02

Kidneys 8.43E-03 9.16E-03 1.21E-02 1.88E-02 2.96E-02

Liver 4.38E-03 4.53E-03 6.87E-03 1.04E-02 1.82E-02

Lungs 3.90E-03 4.01E-03 5.91E-03 8.98E-03 1.63E-02

Ovaries 5.94E-03 6.67E-03 9.26E-03 1.48E-02 2.54E-02

Pancreas 4.96E-03 5.16E-03 7.61E-03 1.17E-02 2.02E-02

Salivary Glands 3.48E-03 4.12E-03 6.35E-03 1.03E-02 1.85E-02

Red Marrow 4.15E-03 4.24E-03 4.91E-03 6.08E-03 8.67E-03

Osteogenic Cells 4.24E-03 4.42E-03 4.83E-03 5.44E-03 7.46E-03

Spleen 4.57E-03 4.74E-03 7.14E-03 1.08E-02 1.87E-02

Thymus 3.98E-03 4.10E-03 6.08E-03 9.41E-03 1.69E-02

Thyroid 3.48E-03 4.12E-03 6.35E-03 1.03E-02 1.85E-02

Urinary Bladder Wall 2.24E-02 2.30E-02 3.32E-02 5.02E-02 7.97E-02

Uterus 7.57E-03 8.98E-03 1.42E-02 2.03E-02 3.09E-02

Total Body 3.93E-03 3.99E-03 6.10E-03 9.53E-03 1.68E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 4.71E-03 5.35E-03 7.79E-03 1.18E-02 2.04E-02

Brain 2.96E-03 3.32E-03 5.42E-03 8.91E-03 1.54E-02

Breasts 2.92E-03 3.05E-03 0.00E+00 0.00E+00 0.00E+00

Esophagus 3.37E-03 4.14E-03 6.43E-03 1.04E-02 1.86E-02

Eyes 2.96E-03 3.32E-03 5.42E-03 8.92E-03 1.54E-02

Gallbladder Wall 4.46E-03 5.16E-03 8.03E-03 1.15E-02 1.66E-02

Left colon 4.49E-03 4.81E-03 7.58E-03 1.13E-02 1.94E-02

Small Intestine 4.52E-03 5.37E-03 8.07E-03 1.23E-02 2.09E-02

Stomach Wall 4.03E-03 4.47E-03 6.77E-03 1.04E-02 1.71E-02

Right colon 4.41E-03 4.90E-03 7.21E-03 1.16E-02 1.89E-02

Rectum 6.24E-03 7.28E-03 1.09E-02 1.55E-02 2.43E-02

Heart Wall 3.97E-03 4.49E-03 6.87E-03 1.01E-02 1.79E-02

Kidneys 7.91E-03 9.07E-03 1.21E-02 1.88E-02 2.95E-02

Liver 3.97E-03 4.50E-03 6.87E-03 1.04E-02 1.82E-02

Lungs 3.49E-03 3.98E-03 5.91E-03 8.99E-03 1.63E-02

Ovaries 5.94E-03 6.67E-03 9.26E-03 1.48E-02 2.54E-02

Pancreas 4.48E-03 5.08E-03 7.55E-03 1.16E-02 2.01E-02

Prostate 5.46E-03 6.75E-03 1.44E-02 1.41E-02 2.02E-02

Salivary Glands 3.33E-03 4.09E-03 6.35E-03 1.03E-02 1.85E-02

Red Marrow 3.82E-03 4.24E-03 5.61E-03 7.60E-03 1.21E-02

Osteogenic Cells 3.96E-03 4.43E-03 5.59E-03 7.32E-03 1.22E-02

Spleen 4.12E-03 4.67E-03 7.10E-03 1.07E-02 1.86E-02

Testes 3.34E-03 4.14E-03 6.99E-03 9.44E-03 1.61E-02

Thymus 3.59E-03 4.07E-03 6.08E-03 9.42E-03 1.69E-02

Thyroid 3.33E-03 4.09E-03 6.36E-03 1.03E-02 1.85E-02

Urinary Bladder Wall 2.16E-02 2.42E-02 3.52E-02 4.99E-02 7.16E-02

Uterus 7.57E-03 8.98E-03 1.42E-02 2.03E-02 3.09E-02

Total Body 3.58E-03 3.97E-03 6.11E-03 9.52E-03 1.67E-02

Effective Dose 4.27E-03 4.82E-03 6.83E-03 1.01E-02 1.66E-02

Radiation Dose Estimates (mSv/MBq) for 51Cr EDTA-Oral Administration

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.17E-02 1.38E-02 1.73E-02 2.42E-02 3.68E-02

Brain 3.70E-05 5.19E-05 1.08E-04 2.06E-04 3.92E-04

Esophagus 3.26E-03 4.13E-03 5.86E-03 8.38E-03 1.32E-02

Eyes 4.69E-05 9.06E-05 1.80E-04 3.50E-04 6.25E-04

Gallbladder Wall 1.85E-02 2.35E-02 3.81E-02 5.66E-02 8.48E-02

Left colon 2.29E-01 2.60E-01 4.30E-01 6.02E-01 7.01E-01

Small Intestine 4.05E-02 4.64E-02 6.77E-02 9.51E-02 1.27E-01

Stomach Wall 1.72E-02 2.17E-02 3.16E-02 4.35E-02 5.85E-02

Right colon 1.45E-01 1.61E-01 2.53E-01 3.51E-01 4.08E-01

Rectum 2.43E-01 3.03E-01 4.86E-01 6.81E-01 8.59E-01

Heart Wall 3.68E-03 4.56E-03 6.37E-03 9.02E-03 1.45E-02

Kidneys 9.08E-03 1.06E-02 1.49E-02 2.14E-02 3.05E-02

Liver 5.79E-03 7.38E-03 1.19E-02 1.67E-02 2.45E-02

Lungs 2.11E-03 2.48E-03 3.55E-03 5.06E-03 7.89E-03

Pancreas 2.26E-02 2.45E-02 2.94E-02 4.05E-02 5.46E-02

Prostate 2.00E-02 2.32E-02 7.71E-02 4.94E-02 7.05E-02

Salivary Glands 8.13E-05 1.30E-04 2.60E-04 4.50E-04 9.26E-04

Red Marrow 4.26E-03 4.65E-03 4.27E-03 3.73E-03 3.46E-03

Osteogenic Cells 3.31E-03 2.91E-03 2.83E-03 2.53E-03 2.36E-03

Spleen 7.38E-03 8.44E-03 1.03E-02 1.46E-02 2.14E-02

Testes 1.57E-03 2.26E-03 3.70E-03 6.03E-03 9.69E-03

Thymus 1.08E-03 1.47E-03 2.01E-03 3.58E-03 6.08E-03

Thyroid 3.36E-04 6.14E-04 9.78E-04 1.68E-03 2.85E-03

Urinary Bladder Wall 1.12E-02 1.46E-02 2.33E-02 3.16E-02 4.96E-02

Total Body 4.32E-03 5.02E-03 7.85E-03 1.21E-02 1.88E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.31E-03 7.16E-03 1.02E-02 1.44E-02 2.29E-02

Brain 3.76E-05 3.13E-05 6.28E-05 1.34E-04 2.69E-04

Breasts 9.68E-04 8.24E-04 ----- ----- -----

Esophagus 2.61E-03 2.37E-03 3.58E-03 3.70E-03 8.61E-03

Eyes 4.29E-05 5.75E-05 9.72E-05 2.39E-04 4.92E-04

Gallbladder Wall 2.49E-02 2.03E-02 3.12E-02 4.23E-02 6.27E-02

Left colon 2.81E-01 2.53E-01 4.16E-01 5.81E-01 6.70E-01

Small Intestine 4.47E-02 4.00E-02 6.02E-02 8.50E-02 1.13E-01

Stomach Wall 2.53E-02 2.12E-02 3.12E-02 4.30E-02 5.77E-02

Right colon 1.78E-01 1.60E-01 2.52E-01 3.48E-01 4.12E-01

Rectum 3.15E-01 3.08E-01 5.00E-01 6.90E-01 8.81E-01

Heart Wall 2.55E-03 2.02E-03 2.86E-03 4.29E-03 6.77E-03

Kidneys 1.14E-02 9.41E-03 1.38E-02 2.03E-02 3.15E-02

Liver 6.68E-03 5.39E-03 8.72E-03 1.28E-02 1.92E-02

Lungs 1.85E-03 1.47E-03 2.02E-03 3.09E-03 4.55E-03

Ovaries 2.77E-02 2.66E-02 3.92E-02 5.82E-02 1.00E-01

Pancreas 1.39E-02 1.20E-02 1.66E-02 2.39E-02 3.19E-02

Salivary Glands 7.33E-05 7.55E-05 1.72E-04 2.69E-04 6.23E-04

Red Marrow 6.64E-03 3.99E-03 3.88E-03 3.72E-03 3.29E-03

Osteogenic Cells 4.65E-03 2.55E-03 2.27E-03 1.99E-03 1.82E-03

Spleen 1.37E-02 1.09E-02 1.24E-02 1.75E-02 2.53E-02

Thymus 9.07E-04 7.14E-04 1.14E-03 1.90E-03 3.07E-03

Thyroid 3.56E-04 3.37E-04 5.41E-04 9.48E-04 1.44E-03

Urinary Bladder Wall 3.08E-02 3.25E-02 4.19E-02 5.70E-02 8.42E-02

Uterus 5.63E-02 6.15E-02 1.14E-01 1.48E-01 2.17E-01

Total Body 8.16E-03 5.17E-03 7.74E-03 1.16E-02 1.86E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.00E-02 1.05E-02 1.38E-02 1.93E-02 2.99E-02

Brain 3.73E-05 4.16E-05 8.54E-05 1.70E-04 3.31E-04

Breasts 9.68E-04 8.24E-04 ----- ----- -----

Esophagus 2.94E-03 3.25E-03 4.72E-03 6.04E-03 1.09E-02

Eyes 4.49E-05 7.41E-05 1.39E-04 2.95E-04 5.59E-04

Gallbladder Wall 2.17E-02 2.19E-02 3.47E-02 4.95E-02 7.38E-02

Left colon 2.55E-01 2.57E-01 4.23E-01 5.92E-01 6.86E-01

Small Intestine 4.26E-02 4.32E-02 6.40E-02 9.01E-02 1.20E-01

Stomach Wall 2.13E-02 2.15E-02 3.14E-02 4.33E-02 5.81E-02

Right colon 1.62E-01 1.61E-01 2.53E-01 3.50E-01 4.10E-01

Rectum 2.79E-01 3.06E-01 4.93E-01 6.86E-01 8.70E-01

Heart Wall 3.12E-03 3.29E-03 4.62E-03 6.66E-03 1.06E-02

Kidneys 1.02E-02 1.00E-02 1.44E-02 2.09E-02 3.10E-02

Liver 6.24E-03 6.39E-03 1.03E-02 1.48E-02 2.19E-02

Lungs 1.98E-03 1.98E-03 2.79E-03 4.08E-03 6.22E-03

Ovaries 2.77E-02 2.66E-02 3.92E-02 5.82E-02 1.00E-01

Pancreas 1.83E-02 1.83E-02 2.30E-02 3.22E-02 4.33E-02

Prostate 2.00E-02 2.32E-02 7.71E-02 4.94E-02 7.05E-02

Salivary Glands 7.73E-05 1.03E-04 2.16E-04 3.60E-04 7.75E-04

Red Marrow 5.45E-03 4.32E-03 4.08E-03 3.73E-03 3.38E-03

Osteogenic Cells 3.98E-03 2.73E-03 2.55E-03 2.26E-03 2.09E-03

Spleen 1.05E-02 9.67E-03 1.14E-02 1.61E-02 2.34E-02

Testes 1.57E-03 2.26E-03 3.70E-03 6.03E-03 9.69E-03

Thymus 9.94E-04 1.09E-03 1.58E-03 2.74E-03 4.58E-03

Thyroid 3.46E-04 4.76E-04 7.60E-04 1.31E-03 2.15E-03

Urinary Bladder Wall 2.10E-02 2.36E-02 3.26E-02 4.43E-02 6.69E-02

Uterus 5.63E-02 6.15E-02 1.14E-01 1.48E-01 2.17E-01

Total Body 6.24E-03 5.10E-03 7.80E-03 1.19E-02 1.87E-02

Effective Dose 3.44E-02 3.51E-02 5.57E-02 7.68E-02 9.55E-02

Radiation Dose Estimates (mSv/MBq) for 67Ga Citrate

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.47E-01 1.93E-01 2.67E-01 3.72E-01 5.33E-01

Brain 5.30E-02 6.63E-02 1.08E-01 1.76E-01 3.07E-01

Esophagus 6.49E-02 8.25E-02 1.30E-01 2.06E-01 3.63E-01

Eyes 5.30E-02 6.64E-02 1.08E-01 1.76E-01 3.09E-01

Gallbladder Wall 9.12E-02 1.16E-01 1.80E-01 2.60E-01 3.61E-01

Left colon 2.11E-01 2.49E-01 4.10E-01 5.85E-01 8.04E-01

Small Intestine 9.05E-02 1.12E-01 1.72E-01 2.58E-01 4.22E-01

Stomach Wall 7.11E-02 9.09E-02 1.42E-01 2.09E-01 3.55E-01

Right colon 1.58E-01 1.88E-01 2.95E-01 4.36E-01 6.04E-01

Rectum 2.01E-01 2.51E-01 4.10E-01 5.86E-01 8.44E-01

Heart Wall 7.01E-02 8.84E-02 1.35E-01 2.00E-01 3.52E-01

Kidneys 1.14E-01 1.39E-01 1.91E-01 2.93E-01 4.61E-01

Liver 1.19E-01 1.57E-01 2.31E-01 3.22E-01 5.31E-01

Lungs 6.23E-02 7.99E-02 1.21E-01 1.85E-01 3.31E-01

Pancreas 8.39E-02 1.03E-01 1.53E-01 2.32E-01 3.96E-01

Prostate 7.38E-02 9.56E-02 1.56E-01 2.10E-01 3.62E-01

Salivary Glands 5.98E-02 7.57E-02 1.20E-01 1.95E-01 3.49E-01

Red Marrow 1.51E-01 1.76E-01 3.00E-01 5.57E-01 1.33E+00

Osteogenic Cells 4.97E-01 6.39E-01 1.03E+00 1.72E+00 4.01E+00

Spleen 1.61E-01 1.88E-01 2.90E-01 4.41E-01 7.41E-01

Testes 5.37E-02 6.69E-02 1.03E-01 1.64E-01 2.95E-01

Thymus 6.05E-02 7.70E-02 1.17E-01 1.83E-01 3.29E-01

Thyroid 6.04E-02 7.66E-02 1.22E-01 1.96E-01 3.50E-01

Urinary Bladder Wall 9.05E-02 1.18E-01 1.74E-01 2.55E-01 4.17E-01

Total Body 6.78E-02 8.39E-02 1.33E-01 2.11E-01 3.78E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.70E-01 2.05E-01 1.42E-01 3.78E-01 5.39E-01

Brain 6.56E-02 6.79E-02 1.08E-01 1.77E-01 3.08E-01

Breasts 5.59E-02 5.97E-02 ----- ----- -----

Esophagus 7.23E-02 8.40E-02 1.30E-01 2.06E-01 3.66E-01

Eyes 6.56E-02 6.79E-02 1.08E-01 1.76E-01 3.07E-01

Gallbladder Wall 1.03E-01 1.09E-01 1.71E-01 2.45E-01 3.40E-01

Left colon 2.50E-01 2.48E-01 4.05E-01 5.78E-01 7.94E-01

Small Intestine 1.04E-01 1.11E-01 1.70E-01 2.55E-01 4.18E-01

Stomach Wall 8.80E-02 9.24E-02 1.42E-01 2.09E-01 3.55E-01

Right colon 1.90E-01 1.87E-01 2.92E-01 4.33E-01 6.02E-01

Rectum 2.39E-01 2.55E-01 4.15E-01 5.89E-01 8.50E-01

Heart Wall 8.34E-02 8.68E-02 1.31E-01 1.96E-01 3.47E-01

Kidneys 1.32E-01 1.42E-01 1.91E-01 2.93E-01 4.62E-01

Liver 1.50E-01 1.55E-01 2.30E-01 3.21E-01 5.31E-01

Lungs 7.85E-02 8.09E-02 1.20E-01 1.83E-01 3.28E-01

Ovaries 9.61E-02 1.01E-01 1.51E-01 2.30E-01 4.02E-01

Pancreas 1.01E-01 1.05E-01 1.55E-01 2.35E-01 3.97E-01

Salivary Glands 6.56E-02 7.71E-02 1.20E-01 1.95E-01 3.47E-01

Red Marrow 1.89E-01 1.85E-01 2.80E-01 5.10E-01 1.22E+00

Osteogenic Cells 5.15E-01 6.40E-01 9.97E-01 1.64E+00 3.82E+00

Spleen 1.90E-01 1.90E-01 2.91E-01 4.43E-01 7.42E-01

Thymus 7.46E-02 7.80E-02 1.16E-01 1.81E-01 3.26E-01

Thyroid 6.63E-02 7.78E-02 1.21E-01 1.96E-01 3.49E-01

Urinary Bladder Wall 1.14E-01 1.24E-01 1.84E-01 2.61E-01 4.27E-01

Uterus 1.02E-01 1.11E-01 1.75E-01 2.57E-01 4.25E-01

Total Body 8.43E-02 8.60E-02 1.33E-01 2.11E-01 3.78E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.59E-01 1.99E-01 2.05E-01 3.75E-01 5.36E-01

Brain 5.93E-02 6.71E-02 1.08E-01 1.77E-01 3.08E-01

Breasts 5.59E-02 5.97E-02 ----- ----- -----

Esophagus 6.86E-02 8.33E-02 1.30E-01 2.06E-01 3.65E-01

Eyes 5.93E-02 6.72E-02 1.08E-01 1.76E-01 3.08E-01

Gallbladder Wall 9.71E-02 1.13E-01 1.76E-01 2.53E-01 3.51E-01

Left colon 2.31E-01 2.49E-01 4.08E-01 5.82E-01 7.99E-01

Small Intestine 9.73E-02 1.12E-01 1.71E-01 2.57E-01 4.20E-01

Stomach Wall 7.96E-02 9.17E-02 1.42E-01 2.09E-01 3.55E-01

Right colon 1.74E-01 1.88E-01 2.94E-01 4.35E-01 6.03E-01

Rectum 2.20E-01 2.53E-01 4.13E-01 5.88E-01 8.47E-01

Heart Wall 7.68E-02 8.76E-02 1.33E-01 1.98E-01 3.50E-01

Kidneys 1.23E-01 1.41E-01 1.91E-01 2.93E-01 4.62E-01

Liver 1.35E-01 1.56E-01 2.31E-01 3.22E-01 5.31E-01

Lungs 7.04E-02 8.04E-02 1.21E-01 1.84E-01 3.30E-01

Ovaries 9.61E-02 1.01E-01 1.51E-01 2.30E-01 4.02E-01

Pancreas 9.25E-02 1.04E-01 1.54E-01 2.34E-01 3.97E-01

Prostate 7.38E-02 9.56E-02 1.56E-01 2.10E-01 3.62E-01

Salivary Glands 6.27E-02 7.64E-02 1.20E-01 1.95E-01 3.48E-01

Red Marrow 1.70E-01 1.81E-01 2.90E-01 5.34E-01 1.28E+00

Osteogenic Cells 5.06E-01 6.40E-01 1.01E+00 1.68E+00 3.92E+00

Spleen 1.76E-01 1.89E-01 2.91E-01 4.42E-01 7.42E-01

Testes 5.37E-02 6.69E-02 1.03E-01 1.64E-01 2.95E-01

Thymus 6.76E-02 7.75E-02 1.17E-01 1.82E-01 3.28E-01

Thyroid 6.34E-02 7.72E-02 1.22E-01 1.96E-01 3.50E-01

Urinary Bladder Wall 1.02E-01 1.21E-01 1.79E-01 2.58E-01 4.22E-01

Uterus 1.02E-01 1.11E-01 1.75E-01 2.57E-01 4.25E-01

Total Body 7.61E-02 8.50E-02 1.33E-01 2.11E-01 3.78E-01

Effective Dose 1.07E-01 1.20E-01 1.75E-01 2.74E-01 5.03E-01

Radiation Dose Estimates (mSv/MBq) for 68Ga Citrate

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.19E-02 4.33E-02 6.12E-02 8.95E-02 1.28E-01

Brain 8.37E-03 1.06E-02 1.79E-02 2.98E-02 5.48E-02

Esophagus 9.56E-03 1.24E-02 2.03E-02 3.84E-02 7.42E-02

Eyes 8.37E-03 1.06E-02 1.79E-02 3.41E-02 6.17E-02

Gallbladder Wall 1.40E-02 3.54E-02 6.88E-02 1.15E-01 2.15E-01

Left colon 2.56E-02 3.26E-02 5.50E-02 8.29E-02 1.30E-01

Small Intestine 7.96E-02 9.90E-02 1.66E-01 2.38E-01 3.26E-01

Stomach Wall 1.03E-02 1.32E-02 2.13E-02 3.56E-02 6.53E-02

Right colon 6.89E-02 8.53E-02 1.42E-01 2.04E-01 2.71E-01

Rectum 1.24E-02 1.55E-02 2.57E-02 4.34E-02 7.88E-02

Heart Wall 1.01E-02 1.29E-02 2.10E-02 3.42E-02 6.33E-02

Kidneys 2.46E-02 3.04E-02 4.21E-02 6.86E-02 1.08E-01

Liver 2.60E-02 3.52E-02 5.31E-02 7.74E-02 1.30E-01

Lungs 9.40E-03 1.22E-02 1.97E-02 3.44E-02 6.51E-02

Pancreas 1.27E-02 1.60E-02 2.51E-02 4.05E-02 7.30E-02

Prostate 1.02E-02 1.27E-02 2.10E-02 3.42E-02 6.54E-02

Salivary Glands 8.84E-03 1.13E-02 1.88E-02 3.43E-02 6.48E-02

Red Marrow 3.43E-02 4.17E-02 7.66E-02 1.55E-01 3.95E-01

Osteogenic Cells 4.04E-02 5.26E-02 8.49E-02 1.42E-01 3.32E-01

Spleen 3.87E-02 4.49E-02 7.07E-02 1.12E-01 1.91E-01

Testes 8.47E-03 1.08E-02 1.79E-02 3.62E-02 6.55E-02

Thymus 9.00E-03 1.17E-02 1.89E-02 3.34E-02 6.06E-02

Thyroid 8.93E-03 1.15E-02 1.90E-02 3.72E-02 7.30E-02

Urinary Bladder Wall 1.88E-02 2.39E-02 3.80E-02 6.67E-02 1.25E-01

Total Body 1.24E-02 1.58E-02 2.66E-02 4.34E-02 8.09E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.84E-02 4.92E-02 2.19E-02 9.26E-02 1.31E-01

Brain 1.03E-02 1.10E-02 1.79E-02 2.98E-02 5.47E-02

Breasts 9.76E-03 1.07E-02 ----- ----- -----

Esophagus 1.16E-02 1.31E-02 2.02E-02 3.29E-02 6.25E-02

Eyes 1.03E-02 1.10E-02 1.79E-02 2.97E-02 5.46E-02

Gallbladder Wall 3.16E-02 4.19E-02 6.71E-02 1.10E-01 2.02E-01

Left colon 3.02E-01 3.97E-01 5.34E-02 7.85E-02 1.20E-01

Small Intestine 1.36E-02 1.52E-02 1.66E-01 2.35E-01 3.17E-01

Stomach Wall 5.42E-02 5.91E-02 2.17E-02 3.48E-02 6.25E-02

Right colon 1.29E-02 1.46E-02 1.42E-01 2.03E-01 2.72E-01

Rectum 1.29E-02 1.34E-02 2.53E-02 3.89E-02 6.77E-02

Heart Wall 1.22E-02 1.32E-02 2.02E-02 3.22E-02 5.88E-02

Kidneys 2.84E-02 3.16E-02 4.24E-02 6.75E-02 1.06E-01

Liver 3.29E-02 3.49E-02 5.30E-02 7.64E-02 1.29E-01

Lungs 1.18E-02 1.28E-02 1.96E-02 3.15E-02 5.85E-02

Ovaries 1.27E-02 1.39E-02 2.27E-02 3.62E-02 6.50E-02

Pancreas 1.55E-02 1.69E-02 2.60E-02 4.11E-02 7.21E-02

Salivary Glands 1.03E-02 1.17E-02 1.88E-02 3.09E-02 5.71E-02

Red Marrow 4.40E-02 4.44E-02 7.51E-02 1.51E-01 3.86E-01

Osteogenic Cells 4.15E-02 5.26E-02 8.32E-02 1.38E-01 3.21E-01

Spleen 4.75E-02 4.79E-02 7.08E-02 1.12E-01 1.87E-01

Thymus 1.11E-02 1.21E-02 1.88E-02 3.04E-02 5.65E-02

Thyroid 1.05E-02 1.19E-02 1.89E-02 3.12E-02 5.74E-02

Urinary Bladder Wall 2.23E-02 2.39E-02 3.90E-02 6.02E-02 1.10E-01

Uterus 1.27E-02 1.39E-02 2.33E-02 3.69E-02 6.61E-02

Total Body 1.54E-02 1.64E-02 2.66E-02 4.33E-02 8.09E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.52E-02 4.63E-02 4.16E-02 9.11E-02 1.30E-01

Brain 9.34E-03 1.08E-02 1.79E-02 2.98E-02 5.48E-02

Breasts 9.76E-03 1.07E-02 ----- ----- -----

Esophagus 1.06E-02 1.28E-02 2.03E-02 3.57E-02 6.84E-02

Eyes 9.34E-03 1.08E-02 1.79E-02 3.19E-02 5.82E-02

Gallbladder Wall 2.28E-02 3.87E-02 6.80E-02 1.13E-01 2.09E-01

Left colon 1.64E-01 2.15E-01 5.42E-02 8.07E-02 1.25E-01

Small Intestine 4.66E-02 5.71E-02 1.66E-01 2.37E-01 3.22E-01

Stomach Wall 3.23E-02 3.62E-02 2.15E-02 3.52E-02 6.39E-02

Right colon 4.09E-02 5.00E-02 1.42E-01 2.04E-01 2.72E-01

Rectum 1.27E-02 1.45E-02 2.55E-02 4.12E-02 7.33E-02

Heart Wall 1.12E-02 1.31E-02 2.06E-02 3.32E-02 6.11E-02

Kidneys 2.65E-02 3.10E-02 4.23E-02 6.81E-02 1.07E-01

Liver 2.95E-02 3.51E-02 5.31E-02 7.69E-02 1.30E-01

Lungs 1.06E-02 1.25E-02 1.97E-02 3.30E-02 6.18E-02

Ovaries 1.27E-02 1.39E-02 2.27E-02 3.62E-02 6.50E-02

Pancreas 1.41E-02 1.65E-02 2.56E-02 4.08E-02 7.26E-02

Prostate 1.02E-02 1.27E-02 2.10E-02 3.42E-02 6.54E-02

Salivary Glands 9.57E-03 1.15E-02 1.88E-02 3.26E-02 6.10E-02

Red Marrow 3.92E-02 4.31E-02 7.59E-02 1.53E-01 3.91E-01

Osteogenic Cells 4.10E-02 5.26E-02 8.41E-02 1.40E-01 3.27E-01

Spleen 4.31E-02 4.64E-02 7.08E-02 1.12E-01 1.89E-01

Testes 8.47E-03 1.08E-02 1.79E-02 3.62E-02 6.55E-02

Thymus 1.01E-02 1.19E-02 1.89E-02 3.19E-02 5.86E-02

Thyroid 9.72E-03 1.17E-02 1.90E-02 3.42E-02 6.52E-02

Urinary Bladder Wall 2.06E-02 2.39E-02 3.85E-02 6.35E-02 1.18E-01

Uterus 1.27E-02 1.39E-02 2.33E-02 3.69E-02 6.61E-02

Total Body 1.39E-02 1.61E-02 2.66E-02 4.34E-02 8.09E-02

Effective Dose 2.76E-02 3.32E-02 3.68E-02 6.20E-02 1.20E-01

Radiation Dose Estimates (mSv/MBq) for 68Ga EDTA

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.33E-02 1.79E-02 2.96E-02 5.17E-02 9.39E-02

Brain 7.92E-03 1.01E-02 1.74E-02 2.91E-02 5.39E-02

Esophagus 8.70E-03 1.12E-02 1.88E-02 3.69E-02 7.27E-02

Eyes 7.94E-03 1.01E-02 1.74E-02 3.37E-02 6.12E-02

Gallbladder Wall 9.90E-03 1.22E-02 2.00E-02 3.28E-02 6.45E-02

Left colon 1.06E-02 1.27E-02 2.10E-02 3.46E-02 6.60E-02

Small Intestine 1.24E-02 1.56E-02 2.53E-02 4.10E-02 8.22E-02

Stomach Wall 9.26E-03 1.17E-02 1.91E-02 3.26E-02 6.09E-02

Right colon 1.06E-02 1.34E-02 2.14E-02 3.47E-02 6.39E-02

Rectum 1.99E-02 2.50E-02 4.10E-02 5.83E-02 1.15E-01

Heart Wall 9.05E-03 1.16E-02 1.93E-02 3.19E-02 5.99E-02

Kidneys 5.06E-02 6.21E-02 8.50E-02 1.37E-01 2.14E-01

Liver 9.33E-03 1.20E-02 1.96E-02 3.28E-02 6.10E-02

Lungs 8.47E-03 1.10E-02 1.81E-02 3.23E-02 6.16E-02

Pancreas 9.82E-03 1.26E-02 2.06E-02 3.44E-02 6.41E-02

Prostate 2.48E-02 3.09E-02 8.18E-02 5.93E-02 1.09E-01

Salivary Glands 8.52E-03 1.10E-02 1.85E-02 3.41E-02 6.51E-02

Red Marrow 8.89E-03 1.12E-02 1.74E-02 2.80E-02 5.87E-02

Osteogenic Cells 6.16E-03 7.79E-03 1.14E-02 1.67E-02 3.10E-02

Spleen 9.72E-03 1.26E-02 2.06E-02 3.58E-02 6.75E-02

Testes 1.20E-02 1.54E-02 3.14E-02 4.35E-02 8.00E-02

Thymus 8.58E-03 1.11E-02 1.83E-02 3.27E-02 5.96E-02

Thyroid 8.55E-03 1.11E-02 1.86E-02 3.71E-02 7.37E-02

Urinary Bladder Wall 5.93E-01 7.66E-01 1.08E+00 1.29E+00 3.26E+00

Total Body 1.28E-02 1.62E-02 2.65E-02 4.00E-02 8.01E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.38E-02 1.54E-02 2.47E-02 4.03E-02 7.62E-02

Brain 9.69E-03 1.06E-02 1.74E-02 2.90E-02 5.36E-02

Breasts 9.43E-03 1.04E-02 ----- ----- -----

Esophagus 1.02E-02 1.17E-02 1.89E-02 3.13E-02 5.79E-02

Eyes 9.70E-03 1.06E-02 1.74E-02 2.90E-02 5.37E-02

Gallbladder Wall 1.24E-02 1.36E-02 2.15E-02 3.34E-02 6.04E-02

Left colon 1.36E-02 1.49E-02 2.44E-02 3.93E-02 7.00E-02

Small Intestine 1.47E-02 1.65E-02 2.59E-02 4.03E-02 7.03E-02

Stomach Wall 1.14E-02 1.22E-02 1.92E-02 3.14E-02 5.72E-02

Right colon 1.26E-02 1.35E-02 2.17E-02 3.49E-02 6.34E-02

Rectum 3.64E-02 4.77E-02 6.40E-02 8.62E-02 1.40E-01

Heart Wall 1.11E-02 1.20E-02 1.92E-02 3.10E-02 5.71E-02

Kidneys 5.65E-02 6.42E-02 8.48E-02 1.35E-01 2.08E-01

Liver 1.14E-02 1.25E-02 1.96E-02 3.23E-02 5.94E-02

Lungs 1.05E-02 1.14E-02 1.81E-02 2.93E-02 5.47E-02

Ovaries 2.22E-02 2.68E-02 3.48E-02 6.26E-02 1.12E-01

Pancreas 1.22E-02 1.34E-02 2.11E-02 3.39E-02 6.20E-02

Salivary Glands 1.00E-02 1.15E-02 1.85E-02 3.07E-02 5.70E-02

Red Marrow 1.05E-02 1.11E-02 1.56E-02 2.48E-02 5.03E-02

Osteogenic Cells 6.75E-03 7.59E-03 9.64E-03 1.25E-02 2.06E-02

Spleen 1.23E-02 1.35E-02 2.13E-02 3.51E-02 6.50E-02

Thymus 1.06E-02 1.15E-02 1.83E-02 2.97E-02 5.56E-02

Thyroid 1.00E-02 1.14E-02 1.85E-02 3.07E-02 5.70E-02

Urinary Bladder Wall 7.42E-01 7.45E-01 1.14E+00 1.65E+00 3.17E+00

Uterus 3.69E-02 4.85E-02 8.07E-02 1.06E-01 1.65E-01

Total Body 1.58E-02 1.68E-02 2.71E-02 4.29E-02 7.97E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.36E-02 1.66E-02 2.72E-02 4.60E-02 8.51E-02

Brain 8.81E-03 1.04E-02 1.74E-02 2.90E-02 5.38E-02

Breasts 9.43E-03 1.04E-02 ----- ----- -----

Esophagus 9.45E-03 1.15E-02 1.89E-02 3.41E-02 6.53E-02

Eyes 8.82E-03 1.04E-02 1.74E-02 3.13E-02 5.75E-02

Gallbladder Wall 1.12E-02 1.29E-02 2.07E-02 3.31E-02 6.25E-02

Left colon 1.21E-02 1.38E-02 2.27E-02 3.70E-02 6.80E-02

Small Intestine 1.35E-02 1.61E-02 2.56E-02 4.07E-02 7.62E-02

Stomach Wall 1.03E-02 1.20E-02 1.91E-02 3.20E-02 5.91E-02

Right colon 1.16E-02 1.35E-02 2.16E-02 3.48E-02 6.36E-02

Rectum 2.81E-02 3.63E-02 5.25E-02 7.22E-02 1.28E-01

Heart Wall 1.01E-02 1.18E-02 1.93E-02 3.15E-02 5.85E-02

Kidneys 5.35E-02 6.31E-02 8.49E-02 1.36E-01 2.11E-01

Liver 1.04E-02 1.23E-02 1.96E-02 3.26E-02 6.02E-02

Lungs 9.47E-03 1.12E-02 1.81E-02 3.08E-02 5.82E-02

Ovaries 2.22E-02 2.68E-02 3.48E-02 6.26E-02 1.12E-01

Pancreas 1.10E-02 1.30E-02 2.08E-02 3.41E-02 6.30E-02

Prostate 2.48E-02 3.09E-02 8.18E-02 5.93E-02 1.09E-01

Salivary Glands 9.27E-03 1.12E-02 1.85E-02 3.24E-02 6.11E-02

Red Marrow 9.71E-03 1.12E-02 1.65E-02 2.64E-02 5.45E-02

Osteogenic Cells 6.45E-03 7.69E-03 1.05E-02 1.46E-02 2.58E-02

Spleen 1.10E-02 1.30E-02 2.09E-02 3.55E-02 6.62E-02

Testes 1.20E-02 1.54E-02 3.14E-02 4.35E-02 8.00E-02

Thymus 9.57E-03 1.13E-02 1.83E-02 3.12E-02 5.76E-02

Thyroid 9.28E-03 1.13E-02 1.85E-02 3.39E-02 6.54E-02

Urinary Bladder Wall 6.68E-01 7.56E-01 1.11E+00 1.47E+00 3.22E+00

Uterus 3.69E-02 4.85E-02 8.07E-02 1.06E-01 1.65E-01

Total Body 1.43E-02 1.65E-02 2.68E-02 4.15E-02 7.99E-02

Effective Dose 3.79E-02 4.33E-02 6.38E-02 8.97E-02 1.87E-01

Radiation Dose Estimates (mSv/MBq) for 82Rb Chloride

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.25E-03 4.58E-03 6.91E-03 1.04E-02 1.53E-02

Brain 1.26E-04 1.32E-04 1.44E-04 1.76E-04 2.67E-04

Esophagus 3.41E-04 4.46E-04 7.32E-04 1.40E-03 2.81E-03

Eyes 1.58E-04 2.03E-04 3.47E-04 7.14E-04 1.39E-03

Gallbladder Wall 9.59E-04 1.24E-03 2.06E-03 3.45E-03 6.53E-03

Left colon 2.10E-02 2.57E-02 3.70E-02 6.39E-02 1.54E-01

Small Intestine 2.76E-03 3.43E-03 4.88E-03 8.16E-03 1.99E-02

Stomach Wall 2.37E-03 3.00E-03 4.34E-03 7.32E-03 1.72E-02

Right colon 1.81E-02 2.23E-02 3.20E-02 5.52E-02 1.33E-01

Rectum 6.17E-03 7.72E-03 1.09E-02 1.97E-02 4.29E-02

Heart Wall 3.65E-03 4.88E-03 8.19E-03 1.34E-02 2.70E-02

Kidneys 8.55E-03 1.05E-02 1.43E-02 2.27E-02 3.47E-02

Liver 1.08E-03 1.47E-03 2.27E-03 3.31E-03 5.63E-03

Lungs 1.88E-03 2.45E-03 4.19E-03 6.76E-03 1.26E-02

Pancreas 1.92E-03 2.39E-03 4.03E-03 6.58E-03 1.10E-02

Prostate 2.67E-04 3.39E-04 6.66E-04 9.02E-04 1.91E-03

Salivary Glands 1.72E-04 2.23E-04 3.76E-04 7.45E-04 1.42E-03

Red Marrow 3.82E-04 4.54E-04 7.64E-04 1.39E-03 3.32E-03

Osteogenic Cells 2.93E-04 3.70E-04 5.79E-04 9.16E-04 2.01E-03

Spleen 3.44E-03 4.00E-03 6.30E-03 9.88E-03 1.67E-02

Testes 1.73E-04 2.25E-04 3.88E-04 8.21E-04 1.65E-03

Thymus 3.59E-04 4.82E-04 7.50E-04 1.46E-03 2.97E-03

Thyroid 2.18E-04 2.80E-04 4.69E-04 1.01E-03 1.96E-03

Urinary Bladder Wall 1.14E-03 1.48E-03 2.31E-03 3.89E-03 7.40E-03

Total Body 4.16E-04 5.33E-04 9.49E-04 1.50E-03 2.52E-03

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.52E-03 4.55E-03 6.34E-03 9.33E-03 1.46E-02

Brain 1.45E-04 1.41E-04 1.62E-04 1.95E-04 2.68E-04

Breasts 2.41E-04 2.71E-04 ----- ----- -----

Esophagus 4.30E-04 4.85E-04 7.96E-04 1.32E-03 2.40E-03

Eyes 1.93E-04 2.11E-04 3.47E-04 5.76E-04 1.08E-03

Gallbladder Wall 1.09E-03 1.22E-03 1.91E-03 3.06E-03 5.57E-03

Left colon 2.17E-02 2.57E-02 3.69E-02 6.36E-02 1.54E-01

Small Intestine 2.97E-03 3.40E-03 4.82E-03 7.98E-03 1.95E-02

Stomach Wall 2.57E-03 2.95E-03 4.24E-03 7.09E-03 1.67E-02

Right colon 1.88E-02 2.23E-02 3.20E-02 5.52E-02 1.34E-01

Rectum 6.23E-03 7.73E-03 1.09E-02 1.96E-02 4.25E-02

Heart Wall 4.81E-03 5.47E-03 1.05E-02 1.34E-02 1.94E-02

Kidneys 9.52E-03 1.09E-02 1.43E-02 2.26E-02 3.44E-02

Liver 1.35E-03 1.45E-03 2.23E-03 3.24E-03 5.54E-03

Lungs 2.30E-03 2.85E-03 4.10E-03 6.48E-03 1.19E-02

Ovaries 3.37E-04 3.83E-04 5.91E-04 9.68E-04 1.74E-03

Pancreas 2.10E-03 2.48E-03 3.95E-03 6.46E-03 1.06E-02

Salivary Glands 2.05E-04 2.33E-04 3.79E-04 6.25E-04 1.17E-03

Red Marrow 4.84E-04 4.69E-04 7.19E-04 1.33E-03 3.17E-03

Osteogenic Cells 3.10E-04 3.67E-04 5.40E-04 8.43E-04 1.83E-03

Spleen 4.09E-03 4.16E-03 6.50E-03 1.02E-02 1.73E-02

Thymus 5.53E-04 5.88E-04 8.86E-04 1.48E-03 2.70E-03

Thyroid 2.55E-04 2.89E-04 4.57E-04 7.41E-04 1.32E-03

Urinary Bladder Wall 1.45E-03 1.50E-03 2.32E-03 3.69E-03 7.00E-03

Uterus 3.86E-04 4.53E-04 7.55E-04 1.15E-03 1.98E-03

Total Body 5.34E-04 5.63E-04 9.48E-04 1.49E-03 2.53E-03

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.38E-03 4.57E-03 6.62E-03 9.88E-03 1.49E-02

Brain 1.36E-04 1.36E-04 1.53E-04 1.86E-04 2.67E-04

Breasts 2.41E-04 2.71E-04 ----- ----- -----

Esophagus 3.85E-04 4.66E-04 7.64E-04 1.36E-03 2.61E-03

Eyes 1.75E-04 2.07E-04 3.47E-04 6.45E-04 1.23E-03

Gallbladder Wall 1.02E-03 1.23E-03 1.99E-03 3.25E-03 6.05E-03

Left colon 2.13E-02 2.57E-02 3.69E-02 6.37E-02 1.54E-01

Small Intestine 2.87E-03 3.42E-03 4.85E-03 8.07E-03 1.97E-02

Stomach Wall 2.47E-03 2.98E-03 4.29E-03 7.21E-03 1.70E-02

Right colon 1.85E-02 2.23E-02 3.20E-02 5.52E-02 1.33E-01

Rectum 6.20E-03 7.73E-03 1.09E-02 1.96E-02 4.27E-02

Heart Wall 4.23E-03 5.18E-03 9.34E-03 1.34E-02 2.32E-02

Kidneys 9.04E-03 1.07E-02 1.43E-02 2.27E-02 3.45E-02

Liver 1.22E-03 1.46E-03 2.25E-03 3.27E-03 5.58E-03

Lungs 2.09E-03 2.65E-03 4.15E-03 6.62E-03 1.22E-02

Ovaries 3.37E-04 3.83E-04 5.91E-04 9.68E-04 1.74E-03

Pancreas 2.01E-03 2.43E-03 3.99E-03 6.52E-03 1.08E-02

Prostate 2.67E-04 3.39E-04 6.66E-04 9.02E-04 1.91E-03

Salivary Glands 1.89E-04 2.28E-04 3.77E-04 6.85E-04 1.29E-03

Red Marrow 4.33E-04 4.61E-04 7.42E-04 1.36E-03 3.25E-03

Osteogenic Cells 3.01E-04 3.69E-04 5.59E-04 8.79E-04 1.92E-03

Spleen 3.77E-03 4.08E-03 6.40E-03 1.00E-02 1.70E-02

Testes 1.73E-04 2.25E-04 3.88E-04 8.21E-04 1.65E-03

Thymus 4.56E-04 5.35E-04 8.18E-04 1.47E-03 2.84E-03

Thyroid 2.36E-04 2.85E-04 4.63E-04 8.77E-04 1.64E-03

Urinary Bladder Wall 1.30E-03 1.49E-03 2.31E-03 3.79E-03 7.20E-03

Uterus 3.86E-04 4.53E-04 7.55E-04 1.15E-03 1.98E-03

Total Body 4.75E-04 5.48E-04 9.48E-04 1.50E-03 2.52E-03

Effective Dose 3.23E-03 3.90E-03 5.67E-03 9.62E-03 2.18E-02

Radiation Dose Estimates (mSv/MBq) for 89Sr Chloride

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.88E-01 8.97E-01 1.57E+00 2.91E+00 5.82E+00

Brain 6.88E-01 8.97E-01 1.57E+00 2.65E+00 5.04E+00

Esophagus 6.88E-01 8.97E-01 1.57E+00 3.20E+00 6.33E+00

Eyes 6.88E-01 8.97E-01 1.57E+00 2.94E+00 5.56E+00

Gallbladder Wall 6.88E-01 8.97E-01 1.57E+00 2.76E+00 5.50E+00

Left colon 7.25E+00 8.54E+00 1.47E+01 2.12E+01 2.67E+01

Small Intestine 9.77E-01 1.26E+00 2.19E+00 3.73E+00 6.95E+00

Stomach Wall 6.88E-01 8.97E-01 1.57E+00 2.76E+00 5.31E+00

Right colon 2.22E+00 2.65E+00 4.56E+00 6.92E+00 1.00E+01

Rectum 3.21E+00 4.04E+00 6.96E+00 1.06E+01 1.54E+01

Heart Wall 6.88E-01 8.97E-01 1.57E+00 2.72E+00 5.22E+00

Kidneys 6.88E-01 8.97E-01 1.57E+00 2.82E+00 5.34E+00

Liver 6.88E-01 8.97E-01 1.57E+00 2.71E+00 5.17E+00

Lungs 6.88E-01 8.97E-01 1.57E+00 2.90E+00 5.56E+00

Pancreas 6.88E-01 8.97E-01 1.57E+00 2.76E+00 5.24E+00

Prostate 6.88E-01 8.97E-01 1.57E+00 2.66E+00 5.78E+00

Salivary Glands 6.88E-01 8.97E-01 1.57E+00 2.92E+00 5.74E+00

Red Marrow 1.06E+01 1.39E+01 2.95E+01 6.55E+01 1.78E+02

Osteogenic Cells 2.21E+01 2.89E+01 4.76E+01 8.07E+01 1.94E+02

Spleen 6.88E-01 8.97E-01 1.57E+00 2.83E+00 5.42E+00

Testes 6.88E-01 8.97E-01 1.57E+00 3.25E+00 6.18E+00

Thymus 6.88E-01 8.97E-01 1.57E+00 2.88E+00 5.33E+00

Thyroid 6.88E-01 8.97E-01 1.57E+00 2.98E+00 6.17E+00

Urinary Bladder Wall 1.55E+00 2.03E+00 3.34E+00 5.96E+00 1.17E+01

Total Body 2.11E+00 2.74E+00 4.80E+00 8.09E+00 1.54E+01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Brain 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Breasts 8.37E-01 9.48E-01 ----- ----- -----

Esophagus 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Eyes 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Gallbladder Wall 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Left colon 8.68E+00 8.59E+00 1.47E+01 2.11E+01 2.63E+01

Small Intestine 1.20E+00 1.31E+00 2.19E+00 3.51E+00 6.11E+00

Stomach Wall 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Right colon 2.74E+00 2.70E+00 4.56E+00 6.82E+00 9.79E+00

Rectum 3.98E+00 4.09E+00 6.96E+00 1.02E+01 1.45E+01

Heart Wall 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Kidneys 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Liver 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Lungs 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Ovaries 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Pancreas 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Salivary Glands 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Red Marrow 1.37E+01 1.50E+01 2.95E+01 6.55E+01 1.78E+02

Osteogenic Cells 2.20E+01 2.89E+01 4.76E+01 8.07E+01 1.94E+02

Spleen 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Thymus 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Thyroid 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Urinary Bladder Wall 1.98E+00 2.09E+00 3.34E+00 5.46E+00 1.06E+01

Uterus 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Total Body 2.57E+00 2.90E+00 4.80E+00 8.09E+00 1.54E+01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.63E-01 9.23E-01 1.57E+00 2.78E+00 5.42E+00

Brain 7.63E-01 9.22E-01 1.57E+00 2.65E+00 5.03E+00

Breasts 8.37E-01 9.48E-01 ----- ----- -----

Esophagus 7.63E-01 9.22E-01 1.57E+00 2.92E+00 5.68E+00

Eyes 7.63E-01 9.22E-01 1.57E+00 2.79E+00 5.29E+00

Gallbladder Wall 7.63E-01 9.22E-01 1.57E+00 2.70E+00 5.26E+00

Left colon 7.97E+00 8.56E+00 1.47E+01 2.11E+01 2.65E+01

Small Intestine 1.09E+00 1.28E+00 2.19E+00 3.62E+00 6.53E+00

Stomach Wall 7.63E-01 9.22E-01 1.57E+00 2.70E+00 5.17E+00

Right colon 2.48E+00 2.68E+00 4.56E+00 6.87E+00 9.89E+00

Rectum 3.60E+00 4.07E+00 6.96E+00 1.04E+01 1.49E+01

Heart Wall 7.63E-01 9.22E-01 1.57E+00 2.68E+00 5.12E+00

Kidneys 7.63E-01 9.22E-01 1.57E+00 2.73E+00 5.18E+00

Liver 7.63E-01 9.22E-01 1.57E+00 2.68E+00 5.10E+00

Lungs 7.63E-01 9.22E-01 1.57E+00 2.77E+00 5.29E+00

Ovaries 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Pancreas 7.63E-01 9.22E-01 1.57E+00 2.70E+00 5.13E+00

Prostate 6.88E-01 8.97E-01 1.57E+00 2.66E+00 5.78E+00

Salivary Glands 7.63E-01 9.22E-01 1.57E+00 2.78E+00 5.38E+00

Red Marrow 1.21E+01 1.45E+01 2.95E+01 6.55E+01 1.78E+02

Osteogenic Cells 2.21E+01 2.89E+01 4.76E+01 8.07E+01 1.94E+02

Spleen 7.63E-01 9.22E-01 1.57E+00 2.74E+00 5.22E+00

Testes 6.88E-01 8.97E-01 1.57E+00 3.25E+00 6.18E+00

Thymus 7.63E-01 9.22E-01 1.57E+00 2.76E+00 5.18E+00

Thyroid 7.63E-01 9.22E-01 1.57E+00 2.81E+00 5.60E+00

Urinary Bladder Wall 1.76E+00 2.06E+00 3.34E+00 5.71E+00 1.11E+01

Uterus 8.37E-01 9.48E-01 1.57E+00 2.64E+00 5.02E+00

Total Body 2.33E+00 2.82E+00 4.80E+00 8.09E+00 1.54E+01

Effective Dose 2.84E+00 3.43E+00 6.33E+00 1.25E+01 2.99E+01

Radiation Dose Estimates (mSv/MBq) for 81Kr Gas

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.74E-06 4.00E-06 5.38E-06 7.94E-06 1.29E-05

Brain 2.49E-07 3.71E-07 6.42E-07 1.03E-06 1.74E-06

Esophagus 1.16E-05 1.45E-05 2.27E-05 3.19E-05 5.40E-05

Eyes 2.08E-07 3.10E-07 5.39E-07 8.70E-07 1.43E-06

Gallbladder Wall 2.25E-06 2.84E-06 4.29E-06 6.27E-06 9.79E-06

Left colon 1.77E-06 2.26E-06 3.13E-06 4.35E-06 7.33E-06

Small Intestine 7.70E-07 1.08E-06 1.76E-06 2.60E-06 4.29E-06

Stomach Wall 7.54E-06 9.32E-06 1.34E-05 1.87E-05 2.87E-05

Right colon 1.10E-06 1.28E-06 1.76E-06 2.54E-06 4.31E-06

Rectum 1.03E-07 1.60E-07 2.94E-07 4.88E-07 9.19E-07

Heart Wall 1.13E-05 1.39E-05 2.07E-05 2.84E-05 4.67E-05

Kidneys 1.44E-06 1.81E-06 2.75E-06 4.04E-06 6.12E-06

Liver 5.42E-06 6.91E-06 9.73E-06 1.35E-05 2.07E-05

Lungs 1.73E-04 2.28E-04 4.02E-04 6.58E-04 1.29E-03

Pancreas 3.85E-06 4.70E-06 6.90E-06 9.91E-06 1.71E-05

Prostate 1.32E-07 1.96E-07 3.82E-07 6.18E-07 1.26E-06

Salivary Glands 7.89E-07 1.10E-06 1.78E-06 2.56E-06 4.54E-06

Red Marrow 3.85E-06 4.10E-06 3.69E-06 3.42E-06 3.36E-06

Osteogenic Cells 2.93E-06 2.55E-06 2.44E-06 2.38E-06 2.08E-06

Spleen 3.11E-06 4.05E-06 5.81E-06 8.04E-06 1.19E-05

Testes 8.21E-09 1.54E-08 3.94E-08 6.93E-08 2.06E-07

Thymus 9.89E-06 1.34E-05 1.74E-05 2.89E-05 4.77E-05

Thyroid 7.82E-06 1.01E-05 1.37E-05 2.09E-05 2.52E-05

Urinary Bladder Wall 5.93E-08 9.38E-08 1.97E-07 3.54E-07 7.38E-07

Total Body 3.60E-06 4.56E-06 7.75E-06 1.26E-05 2.28E-05

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.75E-06 4.34E-06 5.77E-06 7.49E-06 1.09E-05

Brain 3.72E-07 3.77E-07 7.20E-07 1.18E-06 1.94E-06

Breasts 4.12E-06 4.47E-06 ----- ----- -----

Esophagus 1.38E-05 1.50E-05 2.20E-05 3.16E-05 4.72E-05

Eyes 3.65E-07 3.77E-07 6.99E-07 1.13E-06 1.84E-06

Gallbladder Wall 1.64E-06 1.82E-06 2.72E-06 3.80E-06 5.76E-06

Left colon 1.05E-06 1.16E-06 1.55E-06 2.33E-06 3.73E-06

Small Intestine 7.97E-07 8.60E-07 1.32E-06 2.05E-06 3.11E-06

Stomach Wall 6.05E-06 6.53E-06 8.92E-06 1.24E-05 1.95E-05

Right colon 6.36E-07 6.68E-07 8.66E-07 1.37E-06 2.03E-06

Rectum 7.99E-08 9.51E-08 1.76E-07 3.51E-07 6.15E-07

Heart Wall 1.51E-05 1.68E-05 2.23E-05 3.12E-05 5.37E-05

Kidneys 1.60E-06 1.73E-06 2.60E-06 3.87E-06 5.64E-06

Liver 6.23E-06 6.62E-06 9.43E-06 1.30E-05 2.01E-05

Lungs 2.15E-04 2.71E-04 4.00E-04 6.55E-04 1.28E-03

Ovaries 1.51E-07 1.80E-07 3.28E-07 5.78E-07 9.67E-07

Pancreas 3.21E-06 3.57E-06 5.17E-06 7.17E-06 9.45E-06

Salivary Glands 1.15E-06 1.28E-06 2.09E-06 2.98E-06 5.03E-06

Red Marrow 4.35E-06 3.10E-06 2.89E-06 2.47E-06 2.74E-06

Osteogenic Cells 3.64E-06 2.35E-06 2.26E-06 3.03E-06 2.01E-06

Spleen 3.37E-06 3.94E-06 5.59E-06 7.51E-06 1.19E-05

Thymus 1.77E-05 1.78E-05 2.42E-05 3.50E-05 5.35E-05

Thyroid 8.26E-06 9.43E-06 1.35E-05 1.70E-05 2.39E-05

Urinary Bladder Wall 6.52E-08 8.74E-08 1.55E-07 2.79E-07 5.68E-07

Uterus 1.19E-07 1.42E-07 2.64E-07 4.46E-07 8.06E-07

Total Body 5.73E-06 5.00E-06 7.84E-06 1.25E-05 2.28E-05

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.24E-06 4.17E-06 5.58E-06 7.71E-06 1.19E-05

Brain 3.11E-07 3.74E-07 6.81E-07 1.10E-06 1.84E-06

Breasts 4.12E-06 4.47E-06 ----- ----- -----

Esophagus 1.27E-05 1.47E-05 2.24E-05 3.18E-05 5.06E-05

Eyes 2.87E-07 3.43E-07 6.19E-07 9.99E-07 1.63E-06

Gallbladder Wall 1.94E-06 2.33E-06 3.51E-06 5.03E-06 7.77E-06

Left colon 1.41E-06 1.71E-06 2.34E-06 3.34E-06 5.53E-06

Small Intestine 7.84E-07 9.70E-07 1.54E-06 2.32E-06 3.70E-06

Stomach Wall 6.79E-06 7.92E-06 1.12E-05 1.56E-05 2.41E-05

Right colon 8.66E-07 9.76E-07 1.32E-06 1.96E-06 3.17E-06

Rectum 9.12E-08 1.28E-07 2.35E-07 4.20E-07 7.67E-07

Heart Wall 1.32E-05 1.54E-05 2.15E-05 2.98E-05 5.02E-05

Kidneys 1.52E-06 1.77E-06 2.68E-06 3.95E-06 5.88E-06

Liver 5.83E-06 6.76E-06 9.58E-06 1.32E-05 2.04E-05

Lungs 1.94E-04 2.50E-04 4.01E-04 6.57E-04 1.29E-03

Ovaries 1.51E-07 1.80E-07 3.28E-07 5.78E-07 9.67E-07

Pancreas 3.53E-06 4.13E-06 6.04E-06 8.54E-06 1.33E-05

Prostate 1.32E-07 1.96E-07 3.82E-07 6.18E-07 1.26E-06

Salivary Glands 9.71E-07 1.19E-06 1.93E-06 2.77E-06 4.79E-06

Red Marrow 4.10E-06 3.60E-06 3.29E-06 2.94E-06 3.05E-06

Osteogenic Cells 3.29E-06 2.45E-06 2.35E-06 2.71E-06 2.04E-06

Spleen 3.24E-06 3.99E-06 5.70E-06 7.78E-06 1.19E-05

Testes 8.21E-09 1.54E-08 3.94E-08 6.93E-08 2.06E-07

Thymus 1.38E-05 1.56E-05 2.08E-05 3.20E-05 5.06E-05

Thyroid 8.04E-06 9.79E-06 1.36E-05 1.89E-05 2.46E-05

Urinary Bladder Wall 6.22E-08 9.06E-08 1.76E-07 3.16E-07 6.53E-07

Uterus 1.19E-07 1.42E-07 2.64E-07 4.46E-07 8.06E-07

Total Body 4.67E-06 4.78E-06 7.79E-06 1.25E-05 2.28E-05

Effective Dose 2.78E-05 3.51E-05 5.52E-05 8.90E-05 1.71E-04

Radiation Dose Estimates (mSv/MBq) for 99mTc Apcitide

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.32E-03 6.65E-03 1.00E-02 1.51E-02 2.69E-02

Brain 3.88E-03 4.86E-03 7.95E-03 1.28E-02 2.20E-02

Esophagus 4.63E-03 5.89E-03 9.39E-03 1.51E-02 2.66E-02

Eyes 3.88E-03 4.86E-03 7.95E-03 1.28E-02 2.22E-02

Gallbladder Wall 5.60E-03 7.56E-03 1.22E-02 1.80E-02 2.17E-02

Left colon 5.48E-03 6.95E-03 1.10E-02 1.60E-02 2.89E-02

Small Intestine 5.60E-03 7.03E-03 1.06E-02 1.63E-02 2.81E-02

Stomach Wall 5.03E-03 6.70E-03 1.08E-02 1.51E-02 2.61E-02

Right colon 5.44E-03 7.14E-03 1.04E-02 1.67E-02 2.69E-02

Rectum 5.48E-03 6.95E-03 1.10E-02 1.61E-02 2.89E-02

Heart Wall 5.10E-03 6.43E-03 9.65E-03 1.44E-02 2.51E-02

Kidneys 4.90E-03 6.10E-03 9.39E-03 1.44E-02 2.51E-02

Liver 4.94E-03 6.20E-03 9.64E-03 1.44E-02 2.51E-02

Lungs 4.49E-03 5.79E-03 8.64E-03 1.32E-02 2.34E-02

Pancreas 5.67E-03 7.13E-03 1.06E-02 1.63E-02 2.80E-02

Prostate 5.32E-03 7.42E-03 1.04E-02 1.50E-02 2.77E-02

Salivary Glands 4.63E-03 5.89E-03 9.39E-03 1.51E-02 2.65E-02

Red Marrow 4.30E-03 5.27E-03 8.21E-03 1.25E-02 2.34E-02

Osteogenic Cells 7.56E-03 8.99E-03 1.33E-02 1.93E-02 3.44E-02

Spleen 4.90E-03 6.20E-03 9.65E-03 1.44E-02 2.55E-02

Testes 4.10E-03 5.07E-03 7.59E-03 1.21E-02 2.13E-02

Thymus 4.55E-03 5.82E-03 8.65E-03 1.34E-02 2.39E-02

Thyroid 4.63E-03 5.89E-03 9.39E-03 1.50E-02 2.65E-02

Urinary Bladder Wall 5.32E-03 7.42E-03 1.04E-02 1.51E-02 2.77E-02

Total Body 4.41E-03 5.43E-03 8.37E-03 1.31E-02 2.29E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.56E-03 6.74E-03 1.00E-02 1.50E-02 2.68E-02

Brain 4.81E-03 4.94E-03 7.95E-03 1.28E-02 2.20E-02

Breasts 4.04E-03 4.31E-03 ----- ----- -----

Esophagus 4.97E-03 5.97E-03 9.39E-03 1.50E-02 2.64E-02

Eyes 4.81E-03 4.94E-03 7.95E-03 1.28E-02 2.20E-02

Gallbladder Wall 6.93E-03 7.65E-03 1.22E-02 1.80E-02 2.16E-02

Left colon 6.72E-03 7.03E-03 1.10E-02 1.60E-02 2.88E-02

Small Intestine 6.41E-03 7.11E-03 1.06E-02 1.63E-02 2.80E-02

Stomach Wall 6.25E-03 6.78E-03 1.08E-02 1.50E-02 2.61E-02

Right colon 6.72E-03 7.22E-03 1.04E-02 1.67E-02 2.69E-02

Rectum 6.72E-03 7.03E-03 1.10E-02 1.60E-02 2.88E-02

Heart Wall 6.34E-03 6.51E-03 9.65E-03 1.44E-02 2.51E-02

Kidneys 6.00E-03 6.18E-03 9.39E-03 1.44E-02 2.51E-02

Liver 6.08E-03 6.28E-03 9.64E-03 1.44E-02 2.51E-02

Lungs 5.85E-03 5.87E-03 8.64E-03 1.32E-02 2.33E-02

Ovaries 6.87E-03 7.21E-03 1.06E-02 1.63E-02 2.86E-02

Pancreas 6.97E-03 7.21E-03 1.06E-02 1.63E-02 2.80E-02

Salivary Glands 4.97E-03 5.97E-03 9.39E-03 1.50E-02 2.64E-02

Red Marrow 5.16E-03 5.31E-03 6.30E-03 8.28E-03 1.36E-02

Osteogenic Cells 8.83E-03 9.09E-03 9.77E-03 1.08E-02 1.36E-02

Spleen 6.07E-03 6.28E-03 9.65E-03 1.44E-02 2.55E-02

Thymus 5.71E-03 5.90E-03 8.65E-03 1.34E-02 2.38E-02

Thyroid 4.97E-03 5.97E-03 9.39E-03 1.50E-02 2.64E-02

Urinary Bladder Wall 6.78E-03 7.50E-03 1.04E-02 1.50E-02 2.75E-02

Uterus 6.75E-03 7.24E-03 1.09E-02 1.65E-02 2.86E-02

Total Body 5.36E-03 5.51E-03 8.37E-03 1.31E-02 2.29E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.94E-03 6.69E-03 1.00E-02 1.50E-02 2.68E-02

Brain 4.34E-03 4.90E-03 7.95E-03 1.28E-02 2.20E-02

Breasts 4.04E-03 4.31E-03 0.00E+00 0.00E+00 0.00E+00

Esophagus 4.80E-03 5.93E-03 9.39E-03 1.50E-02 2.65E-02

Eyes 4.34E-03 4.90E-03 7.95E-03 1.28E-02 2.21E-02

Gallbladder Wall 6.27E-03 7.61E-03 1.22E-02 1.80E-02 2.17E-02

Left colon 6.10E-03 6.99E-03 1.10E-02 1.60E-02 2.89E-02

Small Intestine 6.01E-03 7.07E-03 1.06E-02 1.63E-02 2.81E-02

Stomach Wall 5.64E-03 6.74E-03 1.08E-02 1.50E-02 2.61E-02

Right colon 6.08E-03 7.18E-03 1.04E-02 1.67E-02 2.69E-02

Rectum 6.10E-03 6.99E-03 1.10E-02 1.60E-02 2.89E-02

Heart Wall 5.72E-03 6.47E-03 9.65E-03 1.44E-02 2.51E-02

Kidneys 5.45E-03 6.14E-03 9.39E-03 1.44E-02 2.51E-02

Liver 5.51E-03 6.24E-03 9.64E-03 1.44E-02 2.51E-02

Lungs 5.17E-03 5.83E-03 8.64E-03 1.32E-02 2.34E-02

Ovaries 6.87E-03 7.21E-03 1.06E-02 1.63E-02 2.86E-02

Pancreas 6.32E-03 7.17E-03 1.06E-02 1.63E-02 2.80E-02

Prostate 5.32E-03 7.42E-03 1.04E-02 1.50E-02 2.77E-02

Salivary Glands 4.80E-03 5.93E-03 9.39E-03 1.51E-02 2.64E-02

Red Marrow 4.73E-03 5.29E-03 7.26E-03 1.04E-02 1.85E-02

Osteogenic Cells 8.20E-03 9.04E-03 1.15E-02 1.50E-02 2.40E-02

Spleen 5.48E-03 6.24E-03 9.65E-03 1.44E-02 2.55E-02

Testes 4.10E-03 5.07E-03 7.59E-03 1.21E-02 2.13E-02

Thymus 5.13E-03 5.86E-03 8.65E-03 1.34E-02 2.39E-02

Thyroid 4.80E-03 5.93E-03 9.39E-03 1.50E-02 2.64E-02

Urinary Bladder Wall 6.05E-03 7.46E-03 1.04E-02 1.51E-02 2.76E-02

Uterus 6.75E-03 7.24E-03 1.09E-02 1.65E-02 2.86E-02

Total Body 4.89E-03 5.47E-03 8.37E-03 1.31E-02 2.29E-02

Effective Dose 4.76E-03 5.50E-03 7.86E-03 1.17E-02 2.05E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Large Colloids - Normal Liver Condition

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.49E-02 3.08E-02 4.17E-02 5.34E-02 9.03E-02

Brain 6.99E-04 9.18E-04 1.40E-03 2.28E-03 4.26E-03

Esophagus 9.36E-03 1.22E-02 1.73E-02 2.35E-02 3.59E-02

Eyes 7.15E-04 9.35E-04 1.42E-03 2.30E-03 4.27E-03

Gallbladder Wall 3.11E-02 3.75E-02 4.81E-02 6.76E-02 1.02E-01

Left colon 5.71E-03 8.69E-03 1.36E-02 1.86E-02 3.02E-02

Small Intestine 4.63E-03 5.92E-03 9.03E-03 1.28E-02 1.95E-02

Stomach Wall 1.01E-02 1.28E-02 1.84E-02 2.59E-02 3.91E-02

Right colon 9.33E-03 1.14E-02 1.77E-02 2.39E-02 3.52E-02

Rectum 1.68E-03 2.24E-03 3.44E-03 4.82E-03 8.16E-03

Heart Wall 9.84E-03 1.25E-02 1.77E-02 2.43E-02 3.84E-02

Kidneys 1.30E-02 1.64E-02 2.28E-02 3.12E-02 4.69E-02

Liver 7.77E-02 1.01E-01 1.45E-01 1.97E-01 3.10E-01

Lungs 7.60E-03 9.38E-03 1.35E-02 1.82E-02 2.76E-02

Pancreas 1.22E-02 1.49E-02 2.10E-02 3.00E-02 5.03E-02

Prostate 1.60E-03 2.22E-03 3.48E-03 5.05E-03 8.59E-03

Salivary Glands 8.92E-04 1.17E-03 1.84E-03 2.93E-03 5.12E-03

Red Marrow 9.13E-03 1.00E-02 1.39E-02 2.31E-02 5.27E-02

Osteogenic Cells 8.20E-03 8.82E-03 1.16E-02 1.64E-02 3.28E-02

Spleen 8.86E-02 1.01E-01 1.55E-01 2.36E-01 3.87E-01

Testes 5.63E-04 7.51E-04 1.18E-03 1.89E-03 3.42E-03

Thymus 4.09E-03 5.40E-03 7.25E-03 1.18E-02 1.99E-02

Thyroid 1.99E-03 2.62E-03 4.01E-03 6.01E-03 9.90E-03

Urinary Bladder Wall 1.16E-03 1.63E-03 2.53E-03 3.71E-03 6.40E-03

Total Body 3.27E-03 4.02E-03 6.35E-03 9.76E-03 1.64E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.71E-02 3.93E-02 5.48E-02 7.27E-02 1.14E-01

Brain 9.16E-04 9.20E-04 1.39E-03 3.62E-03 6.39E-03

Breasts 3.06E-03 3.23E-03 ----- ----- -----

Esophagus 1.23E-02 1.30E-02 1.95E-02 2.74E-02 5.03E-02

Eyes 9.32E-04 9.30E-04 1.40E-03 2.29E-03 4.28E-03

Gallbladder Wall 2.18E-02 2.33E-02 3.20E-02 4.18E-02 6.86E-02

Left colon 6.80E-03 7.32E-03 1.01E-02 1.44E-02 2.35E-02

Small Intestine 6.17E-03 6.64E-03 9.48E-03 1.37E-02 2.19E-02

Stomach Wall 1.23E-02 1.31E-02 1.83E-02 2.57E-02 3.94E-02

Right colon 7.59E-03 8.35E-03 1.32E-02 1.91E-02 2.85E-02

Rectum 1.98E-03 2.09E-03 3.23E-03 4.58E-03 7.70E-03

Heart Wall 7.67E-03 8.17E-03 1.17E-02 1.68E-02 2.86E-02

Kidneys 1.67E-02 1.81E-02 2.46E-02 3.39E-02 4.91E-02

Liver 9.61E-02 1.02E-01 1.46E-01 1.97E-01 3.12E-01

Lungs 8.78E-03 9.32E-03 1.26E-02 1.74E-02 2.57E-02

Ovaries 2.49E-03 2.65E-03 3.95E-03 5.81E-03 9.28E-03

Pancreas 2.09E-02 2.27E-02 3.15E-02 4.52E-02 6.34E-02

Salivary Glands 1.02E-03 1.13E-03 1.77E-03 2.86E-03 4.96E-03

Red Marrow 1.11E-02 9.71E-03 1.31E-02 2.20E-02 5.10E-02

Osteogenic Cells 9.45E-03 8.47E-03 1.09E-02 1.51E-02 3.05E-02

Spleen 1.01E-01 1.02E-01 1.56E-01 2.37E-01 3.87E-01

Thymus 4.84E-03 5.20E-03 7.14E-03 1.05E-02 1.77E-02

Thyroid 2.19E-03 2.37E-03 3.56E-03 5.40E-03 8.93E-03

Urinary Bladder Wall 1.43E-03 1.64E-03 2.47E-03 3.71E-03 6.40E-03

Uterus 2.08E-03 2.21E-03 3.35E-03 5.01E-03 8.15E-03

Total Body 6.15E-03 4.32E-03 6.43E-03 9.74E-03 1.68E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.10E-02 3.51E-02 4.83E-02 6.30E-02 1.02E-01

Brain 8.08E-04 9.19E-04 1.39E-03 2.95E-03 5.32E-03

Breasts 3.06E-03 3.23E-03 ----- ----- -----

Esophagus 1.08E-02 1.26E-02 1.84E-02 2.55E-02 4.31E-02

Eyes 8.24E-04 9.33E-04 1.41E-03 2.30E-03 4.27E-03

Gallbladder Wall 2.65E-02 3.04E-02 4.01E-02 5.47E-02 8.53E-02

Left colon 6.25E-03 8.01E-03 1.19E-02 1.65E-02 2.68E-02

Small Intestine 5.40E-03 6.28E-03 9.26E-03 1.32E-02 2.07E-02

Stomach Wall 1.12E-02 1.30E-02 1.84E-02 2.58E-02 3.92E-02

Right colon 8.46E-03 9.89E-03 1.55E-02 2.15E-02 3.18E-02

Rectum 1.83E-03 2.16E-03 3.34E-03 4.70E-03 7.93E-03

Heart Wall 8.75E-03 1.03E-02 1.47E-02 2.06E-02 3.35E-02

Kidneys 1.48E-02 1.72E-02 2.37E-02 3.26E-02 4.80E-02

Liver 8.69E-02 1.01E-01 1.46E-01 1.97E-01 3.11E-01

Lungs 8.19E-03 9.35E-03 1.30E-02 1.78E-02 2.67E-02

Ovaries 2.49E-03 2.65E-03 3.95E-03 5.81E-03 9.28E-03

Pancreas 1.65E-02 1.88E-02 2.62E-02 3.76E-02 5.69E-02

Prostate 1.60E-03 2.22E-03 3.48E-03 5.05E-03 8.59E-03

Salivary Glands 9.56E-04 1.15E-03 1.81E-03 2.90E-03 5.04E-03

Red Marrow 1.01E-02 9.86E-03 1.35E-02 2.26E-02 5.18E-02

Osteogenic Cells 8.83E-03 8.64E-03 1.12E-02 1.58E-02 3.16E-02

Spleen 9.47E-02 1.02E-01 1.55E-01 2.36E-01 3.87E-01

Testes 5.63E-04 7.51E-04 1.18E-03 1.89E-03 3.42E-03

Thymus 4.46E-03 5.30E-03 7.19E-03 1.11E-02 1.88E-02

Thyroid 2.09E-03 2.50E-03 3.78E-03 5.71E-03 9.41E-03

Urinary Bladder Wall 1.29E-03 1.64E-03 2.50E-03 3.71E-03 6.40E-03

Uterus 2.08E-03 2.21E-03 3.35E-03 5.01E-03 8.15E-03

Total Body 4.71E-03 4.17E-03 6.39E-03 9.75E-03 1.66E-02

Effective Dose 1.11E-02 1.26E-02 1.77E-02 2.51E-02 4.16E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Large Colloids -

Early to Intermediate Diffuse Parenchymal Liver Disease

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.47E-02 3.02E-02 4.07E-02 5.30E-02 9.35E-02

Brain 1.01E-03 1.31E-03 1.97E-03 3.18E-03 5.92E-03

Esophagus 8.11E-03 1.06E-02 1.51E-02 2.06E-02 3.15E-02

Eyes 1.02E-03 1.32E-03 1.98E-03 3.19E-03 5.93E-03

Gallbladder Wall 2.30E-02 2.76E-02 3.59E-02 5.05E-02 7.58E-02

Left colon 6.91E-03 9.65E-03 1.36E-02 1.85E-02 2.94E-02

Small Intestine 4.76E-03 6.01E-03 9.05E-03 1.28E-02 1.96E-02

Stomach Wall 1.12E-02 1.43E-02 2.06E-02 2.87E-02 4.40E-02

Right colon 7.73E-03 9.49E-03 1.47E-02 2.01E-02 2.98E-02

Rectum 2.24E-03 2.95E-03 4.45E-03 6.10E-03 1.02E-02

Heart Wall 8.18E-03 1.03E-02 1.47E-02 2.02E-02 3.21E-02

Kidneys 1.34E-02 1.66E-02 2.32E-02 3.20E-02 4.78E-02

Liver 5.56E-02 7.24E-02 1.04E-01 1.41E-01 2.22E-01

Lungs 6.64E-03 8.18E-03 1.17E-02 1.59E-02 2.45E-02

Pancreas 1.15E-02 1.40E-02 1.98E-02 2.83E-02 4.62E-02

Prostate 1.93E-03 2.62E-03 4.05E-03 5.78E-03 9.88E-03

Salivary Glands 1.21E-03 1.54E-03 2.38E-03 3.76E-03 6.52E-03

Red Marrow 1.19E-02 1.31E-02 1.91E-02 3.29E-02 7.71E-02

Osteogenic Cells 9.85E-03 1.10E-02 1.52E-02 2.25E-02 4.73E-02

Spleen 1.70E-01 1.93E-01 2.96E-01 4.51E-01 7.41E-01

Testes 8.13E-04 1.07E-03 1.66E-03 2.63E-03 4.66E-03

Thymus 3.68E-03 4.81E-03 6.46E-03 1.04E-02 1.76E-02

Thyroid 2.11E-03 2.73E-03 4.13E-03 6.24E-03 1.04E-02

Urinary Bladder Wall 1.52E-03 2.12E-03 3.22E-03 4.61E-03 7.84E-03

Total Body 3.48E-03 4.26E-03 6.67E-03 1.02E-02 1.73E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 4.48E-02 4.65E-02 6.44E-02 7.27E-02 1.35E-01

Brain 1.33E-03 1.32E-03 1.96E-03 3.62E-03 1.01E-02

Breasts 2.78E-03 2.95E-03 1.65E-02 1.65E-02 1.65E-02

Esophagus 1.04E-02 1.11E-02 1.97E-03 2.74E-02 4.18E-02

Eyes 1.34E-03 1.33E-03 2.51E-02 2.29E-03 5.94E-03

Gallbladder Wall 1.68E-02 1.80E-02 1.19E-02 4.18E-02 5.33E-02

Left colon 8.76E-03 9.34E-03 9.84E-03 1.44E-02 2.62E-02

Small Intestine 6.48E-03 6.90E-03 2.32E-02 1.37E-02 2.22E-02

Stomach Wall 1.58E-02 1.67E-02 1.11E-02 2.57E-02 4.73E-02

Right colon 6.72E-03 7.31E-03 4.21E-03 1.91E-02 2.40E-02

Rectum 2.67E-03 2.78E-03 1.08E-02 4.58E-03 9.60E-03

Heart Wall 7.09E-03 7.53E-03 2.55E-02 1.68E-02 2.59E-02

Kidneys 1.76E-02 1.89E-02 1.05E-01 3.39E-02 5.20E-02

Liver 6.88E-02 7.28E-02 1.11E-02 1.97E-01 2.24E-01

Lungs 7.71E-03 8.13E-03 4.76E-03 1.74E-02 2.30E-02

Ovaries 3.11E-03 3.29E-03 2.83E-02 5.81E-03 1.09E-02

Pancreas 1.89E-02 2.05E-02 2.32E-03 4.52E-02 5.70E-02

Salivary Glands 1.37E-03 1.52E-03 1.83E-02 2.86E-03 6.36E-03

Red Marrow 1.46E-02 1.31E-02 1.43E-02 2.20E-02 7.50E-02

Osteogenic Cells 1.11E-02 1.07E-02 2.97E-01 1.51E-02 4.39E-02

Spleen 1.93E-01 1.94E-01 6.38E-03 2.37E-01 7.39E-01

Thymus 4.34E-03 4.60E-03 3.73E-03 1.05E-02 1.58E-02

Thyroid 2.27E-03 2.50E-03 3.16E-03 5.40E-03 9.48E-03

Urinary Bladder Wall 1.88E-03 2.13E-03 4.08E-03 3.71E-03 7.83E-03

Uterus 2.62E-03 2.77E-03 6.69E-03 5.01E-03 9.64E-03

Total Body 6.02E-03 4.50E-03 6.67E-03 9.74E-03 1.75E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.47E-02 3.83E-02 5.25E-02 7.01E-02 1.14E-01

Brain 1.17E-03 1.32E-03 1.96E-03 4.50E-03 8.03E-03

Breasts 2.78E-03 2.95E-03 ----- ----- -----

Esophagus 9.25E-03 1.08E-02 1.58E-02 2.19E-02 3.66E-02

Eyes 1.18E-03 1.33E-03 1.97E-03 3.19E-03 5.93E-03

Gallbladder Wall 1.99E-02 2.28E-02 3.05E-02 4.18E-02 6.45E-02

Left colon 7.83E-03 9.49E-03 1.28E-02 1.76E-02 2.78E-02

Small Intestine 5.62E-03 6.46E-03 9.44E-03 1.35E-02 2.09E-02

Stomach Wall 1.35E-02 1.55E-02 2.19E-02 3.04E-02 4.56E-02

Right colon 7.23E-03 8.40E-03 1.29E-02 1.80E-02 2.69E-02

Rectum 2.45E-03 2.87E-03 4.33E-03 5.95E-03 9.90E-03

Heart Wall 7.63E-03 8.93E-03 1.27E-02 1.78E-02 2.90E-02

Kidneys 1.55E-02 1.77E-02 2.44E-02 3.38E-02 4.99E-02

Liver 6.22E-02 7.26E-02 1.04E-01 1.41E-01 2.23E-01

Lungs 7.18E-03 8.15E-03 1.14E-02 1.56E-02 2.37E-02

Ovaries 3.11E-03 3.29E-03 4.76E-03 6.92E-03 1.09E-02

Pancreas 1.52E-02 1.72E-02 2.41E-02 3.44E-02 5.16E-02

Prostate 1.93E-03 2.62E-03 4.05E-03 5.78E-03 9.88E-03

Salivary Glands 1.29E-03 1.53E-03 2.35E-03 3.73E-03 6.44E-03

Red Marrow 1.32E-02 1.31E-02 1.87E-02 3.23E-02 7.60E-02

Osteogenic Cells 1.05E-02 1.09E-02 1.48E-02 2.17E-02 4.56E-02

Spleen 1.81E-01 1.94E-01 2.97E-01 4.52E-01 7.40E-01

Testes 8.13E-04 1.07E-03 1.66E-03 2.63E-03 4.66E-03

Thymus 4.01E-03 4.70E-03 6.42E-03 9.92E-03 1.67E-02

Thyroid 2.19E-03 2.62E-03 3.93E-03 5.97E-03 9.92E-03

Urinary Bladder Wall 1.70E-03 2.12E-03 3.19E-03 4.60E-03 7.84E-03

Uterus 2.62E-03 2.77E-03 4.08E-03 6.01E-03 9.64E-03

Total Body 4.75E-03 4.38E-03 6.68E-03 1.02E-02 1.74E-02

Effective Dose 1.14E-02 1.27E-02 1.81E-02 2.62E-02 4.45E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Large Colloids

Intermediate to Advanced Diffuse Parenchymal Liver Disease

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.54E-02 3.05E-02 4.09E-02 5.42E-02 9.94E-02

Brain 1.27E-03 1.65E-03 2.36E-03 3.79E-03 7.22E-03

Esophagus 6.97E-03 9.11E-03 1.29E-02 1.76E-02 2.68E-02

Eyes 1.27E-03 1.65E-03 2.36E-03 3.79E-03 7.21E-03

Gallbladder Wall 1.53E-02 1.82E-02 2.42E-02 3.41E-02 5.08E-02

Left colon 8.35E-03 1.09E-02 1.40E-02 1.85E-02 2.87E-02

Small Intestine 5.01E-03 6.22E-03 9.17E-03 1.27E-02 1.94E-02

Stomach Wall 1.26E-02 1.60E-02 2.30E-02 3.20E-02 4.94E-02

Right colon 6.30E-03 7.72E-03 1.20E-02 1.64E-02 2.43E-02

Rectum 2.87E-03 3.77E-03 5.51E-03 7.25E-03 1.17E-02

Heart Wall 6.63E-03 8.27E-03 1.18E-02 1.61E-02 2.57E-02

Kidneys 1.42E-02 1.73E-02 2.43E-02 3.35E-02 4.95E-02

Liver 3.49E-02 4.53E-02 6.50E-02 8.85E-02 1.39E-01

Lungs 5.81E-03 7.09E-03 1.01E-02 1.37E-02 2.12E-02

Pancreas 1.12E-02 1.34E-02 1.90E-02 2.68E-02 4.24E-02

Prostate 2.17E-03 2.88E-03 4.45E-03 6.19E-03 1.03E-02

Salivary Glands 1.43E-03 1.78E-03 2.63E-03 4.09E-03 6.97E-03

Red Marrow 1.77E-02 1.95E-02 2.95E-02 5.25E-02 1.26E-01

Osteogenic Cells 1.31E-02 1.53E-02 2.20E-02 3.39E-02 7.45E-02

Spleen 2.58E-01 2.93E-01 4.49E-01 6.85E-01 1.12E+00

Testes 9.08E-04 1.22E-03 1.88E-03 2.94E-03 5.09E-03

Thymus 3.26E-03 4.17E-03 5.55E-03 8.85E-03 1.47E-02

Thyroid 2.14E-03 2.72E-03 4.02E-03 6.05E-03 9.98E-03

Urinary Bladder Wall 1.78E-03 2.43E-03 3.69E-03 5.13E-03 8.37E-03

Total Body 3.78E-03 4.62E-03 7.15E-03 1.10E-02 1.85E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.41E-02 5.54E-02 7.62E-02 1.05E-01 1.59E-01

Brain 1.69E-03 1.65E-03 2.35E-03 7.85E-03 1.37E-02

Breasts 2.46E-03 2.60E-03 ----- ----- -----

Esophagus 8.67E-03 9.25E-03 1.36E-02 1.92E-02 3.35E-02

Eyes 1.70E-03 1.66E-03 2.35E-03 3.78E-03 7.22E-03

Gallbladder Wall 1.21E-02 1.30E-02 1.85E-02 2.47E-02 3.86E-02

Left colon 1.11E-02 1.17E-02 1.40E-02 1.91E-02 2.90E-02

Small Intestine 6.98E-03 7.32E-03 1.03E-02 1.46E-02 2.22E-02

Stomach Wall 1.96E-02 2.06E-02 2.84E-02 3.88E-02 5.58E-02

Right colon 5.96E-03 6.37E-03 9.12E-03 1.29E-02 1.94E-02

Rectum 3.48E-03 3.57E-03 5.23E-03 6.90E-03 1.10E-02

Heart Wall 6.54E-03 6.93E-03 9.83E-03 1.39E-02 2.29E-02

Kidneys 1.92E-02 2.02E-02 2.72E-02 3.83E-02 5.58E-02

Liver 4.31E-02 4.56E-02 6.56E-02 8.87E-02 1.41E-01

Lungs 6.75E-03 7.05E-03 9.64E-03 1.33E-02 2.02E-02

Ovaries 3.87E-03 4.05E-03 5.64E-03 7.93E-03 1.19E-02

Pancreas 1.73E-02 1.87E-02 2.58E-02 3.67E-02 5.14E-02

Salivary Glands 1.62E-03 1.76E-03 2.57E-03 4.01E-03 6.80E-03

Red Marrow 2.18E-02 1.99E-02 2.87E-02 5.14E-02 1.24E-01

Osteogenic Cells 1.44E-02 1.48E-02 2.11E-02 3.22E-02 7.10E-02

Spleen 2.92E-01 2.95E-01 4.51E-01 6.86E-01 1.12E+00

Thymus 3.79E-03 3.95E-03 5.51E-03 8.08E-03 1.34E-02

Thyroid 2.30E-03 2.51E-03 3.66E-03 5.54E-03 9.17E-03

Urinary Bladder Wall 2.17E-03 2.45E-03 3.65E-03 5.09E-03 8.37E-03

Uterus 3.17E-03 3.33E-03 4.69E-03 6.73E-03 1.04E-02

Total Body 6.06E-03 4.81E-03 7.13E-03 1.08E-02 1.85E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.98E-02 4.30E-02 5.86E-02 7.94E-02 1.29E-01

Brain 1.48E-03 1.65E-03 2.36E-03 5.82E-03 1.05E-02

Breasts 2.46E-03 2.60E-03 ----- ----- -----

Esophagus 7.82E-03 9.18E-03 1.32E-02 1.84E-02 3.01E-02

Eyes 1.48E-03 1.66E-03 2.36E-03 3.79E-03 7.22E-03

Gallbladder Wall 1.37E-02 1.56E-02 2.13E-02 2.94E-02 4.47E-02

Left colon 9.71E-03 1.13E-02 1.40E-02 1.88E-02 2.89E-02

Small Intestine 6.00E-03 6.77E-03 9.76E-03 1.37E-02 2.08E-02

Stomach Wall 1.61E-02 1.83E-02 2.57E-02 3.54E-02 5.26E-02

Right colon 6.13E-03 7.04E-03 1.06E-02 1.46E-02 2.18E-02

Rectum 3.17E-03 3.67E-03 5.37E-03 7.07E-03 1.14E-02

Heart Wall 6.58E-03 7.60E-03 1.08E-02 1.50E-02 2.43E-02

Kidneys 1.67E-02 1.87E-02 2.57E-02 3.59E-02 5.27E-02

Liver 3.90E-02 4.55E-02 6.53E-02 8.86E-02 1.40E-01

Lungs 6.28E-03 7.07E-03 9.89E-03 1.35E-02 2.07E-02

Ovaries 3.87E-03 4.05E-03 5.64E-03 7.93E-03 1.19E-02

Pancreas 1.43E-02 1.60E-02 2.24E-02 3.18E-02 4.69E-02

Prostate 2.17E-03 2.88E-03 4.45E-03 6.19E-03 1.03E-02

Salivary Glands 1.52E-03 1.77E-03 2.60E-03 4.05E-03 6.88E-03

Red Marrow 1.98E-02 1.97E-02 2.91E-02 5.20E-02 1.25E-01

Osteogenic Cells 1.37E-02 1.51E-02 2.15E-02 3.30E-02 7.28E-02

Spleen 2.75E-01 2.94E-01 4.50E-01 6.85E-01 1.12E+00

Testes 9.08E-04 1.22E-03 1.88E-03 2.94E-03 5.09E-03

Thymus 3.52E-03 4.06E-03 5.53E-03 8.46E-03 1.41E-02

Thyroid 2.22E-03 2.62E-03 3.84E-03 5.79E-03 9.58E-03

Urinary Bladder Wall 1.98E-03 2.44E-03 3.67E-03 5.11E-03 8.37E-03

Uterus 3.17E-03 3.33E-03 4.69E-03 6.73E-03 1.04E-02

Total Body 4.92E-03 4.72E-03 7.14E-03 1.09E-02 1.85E-02

Effective Dose 1.24E-02 1.36E-02 1.95E-02 2.89E-02 5.12E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Small Colloids - Normal Liver Condition

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.49E-02 3.08E-02 4.15E-02 5.30E-02 8.95E-02

Brain 6.24E-04 8.34E-04 1.19E-03 1.93E-03 3.79E-03

Esophagus 9.19E-03 1.20E-02 1.69E-02 2.28E-02 3.47E-02

Eyes 6.40E-04 8.52E-04 1.21E-03 1.95E-03 3.79E-03

Gallbladder Wall 3.09E-02 3.70E-02 4.76E-02 6.67E-02 1.01E-01

Left colon 5.71E-03 8.70E-03 1.35E-02 1.83E-02 2.94E-02

Small Intestine 4.61E-03 5.87E-03 8.88E-03 1.25E-02 1.85E-02

Stomach Wall 9.93E-03 1.26E-02 1.80E-02 2.52E-02 3.80E-02

Right colon 9.25E-03 1.13E-02 1.75E-02 2.34E-02 3.43E-02

Rectum 1.71E-03 2.28E-03 3.40E-03 4.57E-03 7.45E-03

Heart Wall 9.70E-03 1.23E-02 1.74E-02 2.37E-02 3.73E-02

Kidneys 1.30E-02 1.63E-02 2.27E-02 3.09E-02 4.61E-02

Liver 7.72E-02 1.00E-01 1.44E-01 1.96E-01 3.07E-01

Lungs 7.50E-03 9.24E-03 1.32E-02 1.77E-02 2.68E-02

Pancreas 1.20E-02 1.47E-02 2.07E-02 2.95E-02 4.92E-02

Prostate 1.47E-03 2.01E-03 3.20E-03 4.58E-03 7.53E-03

Salivary Glands 7.68E-04 9.96E-04 1.51E-03 2.36E-03 4.07E-03

Red Marrow 1.18E-02 1.29E-02 1.86E-02 3.20E-02 7.51E-02

Osteogenic Cells 9.47E-03 1.05E-02 1.42E-02 2.09E-02 4.41E-02

Spleen 8.82E-02 1.01E-01 1.54E-01 2.35E-01 3.85E-01

Testes 3.98E-04 5.65E-04 9.06E-04 1.42E-03 2.54E-03

Thymus 3.97E-03 5.21E-03 6.95E-03 1.13E-02 1.89E-02

Thyroid 1.87E-03 2.44E-03 3.67E-03 5.43E-03 8.83E-03

Urinary Bladder Wall 1.02E-03 1.43E-03 2.26E-03 3.24E-03 5.34E-03

Total Body 3.27E-03 4.02E-03 6.34E-03 9.70E-03 1.63E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.70E-02 3.92E-02 5.46E-02 7.22E-02 1.13E-01

Brain 8.49E-04 8.33E-04 1.18E-03 3.27E-03 5.91E-03

Breasts 2.93E-03 3.08E-03 ----- ----- -----

Esophagus 1.21E-02 1.28E-02 1.91E-02 2.68E-02 4.90E-02

Eyes 8.65E-04 8.43E-04 1.19E-03 1.95E-03 3.81E-03

Gallbladder Wall 2.15E-02 2.29E-02 3.15E-02 4.10E-02 6.77E-02

Left colon 6.84E-03 7.34E-03 1.01E-02 1.41E-02 2.27E-02

Small Intestine 6.16E-03 6.58E-03 9.32E-03 1.33E-02 2.09E-02

Stomach Wall 1.21E-02 1.29E-02 1.79E-02 2.51E-02 3.82E-02

Right colon 7.51E-03 8.24E-03 1.31E-02 1.86E-02 2.76E-02

Rectum 2.03E-03 2.12E-03 3.19E-03 4.33E-03 6.99E-03

Heart Wall 7.48E-03 7.98E-03 1.14E-02 1.63E-02 2.76E-02

Kidneys 1.66E-02 1.80E-02 2.44E-02 3.35E-02 4.83E-02

Liver 9.54E-02 1.01E-01 1.45E-01 1.96E-01 3.10E-01

Lungs 8.64E-03 9.17E-03 1.23E-02 1.70E-02 2.49E-02

Ovaries 2.54E-03 2.69E-03 3.90E-03 5.56E-03 8.47E-03

Pancreas 2.07E-02 2.25E-02 3.11E-02 4.45E-02 6.22E-02

Salivary Glands 9.06E-04 9.51E-04 1.44E-03 2.30E-03 3.92E-03

Red Marrow 1.45E-02 1.28E-02 1.79E-02 3.11E-02 7.39E-02

Osteogenic Cells 1.08E-02 1.01E-02 1.38E-02 2.01E-02 4.29E-02

Spleen 1.00E-01 1.02E-01 1.55E-01 2.36E-01 3.85E-01

Thymus 4.67E-03 5.02E-03 6.83E-03 9.95E-03 1.67E-02

Thyroid 2.07E-03 2.19E-03 3.22E-03 4.83E-03 7.87E-03

Urinary Bladder Wall 1.24E-03 1.43E-03 2.20E-03 3.25E-03 5.35E-03

Uterus 2.03E-03 2.13E-03 3.14E-03 4.58E-03 7.17E-03

Total Body 6.15E-03 4.33E-03 6.42E-03 9.68E-03 1.67E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.24E-02 3.50E-02 4.81E-02 6.26E-02 1.01E-01

Brain 3.12E-04 8.34E-04 1.18E-03 2.60E-03 4.85E-03

Breasts 0.00E+00 3.08E-03 ----- ----- -----

Esophagus 4.60E-03 1.24E-02 1.80E-02 2.48E-02 4.19E-02

Eyes 3.20E-04 8.47E-04 1.20E-03 1.95E-03 3.80E-03

Gallbladder Wall 1.54E-02 3.00E-02 3.95E-02 5.38E-02 8.43E-02

Left colon 2.86E-03 8.02E-03 1.18E-02 1.62E-02 2.60E-02

Small Intestine 2.31E-03 6.23E-03 9.10E-03 1.29E-02 1.97E-02

Stomach Wall 4.97E-03 1.27E-02 1.79E-02 2.52E-02 3.81E-02

Right colon 4.62E-03 9.77E-03 1.53E-02 2.10E-02 3.09E-02

Rectum 8.53E-04 2.20E-03 3.30E-03 4.45E-03 7.22E-03

Heart Wall 4.85E-03 1.01E-02 1.44E-02 2.00E-02 3.24E-02

Kidneys 6.48E-03 1.72E-02 2.36E-02 3.22E-02 4.72E-02

Liver 3.86E-02 1.01E-01 1.45E-01 1.96E-01 3.09E-01

Lungs 3.75E-03 9.21E-03 1.28E-02 1.74E-02 2.59E-02

Ovaries 0.00E+00 2.69E-03 3.90E-03 5.56E-03 8.47E-03

Pancreas 6.02E-03 1.86E-02 2.59E-02 3.70E-02 5.57E-02

Prostate 1.47E-03 2.01E-03 3.20E-03 4.58E-03 7.53E-03

Salivary Glands 3.84E-04 9.74E-04 1.48E-03 2.33E-03 3.99E-03

Red Marrow 5.91E-03 1.29E-02 1.83E-02 3.16E-02 7.45E-02

Osteogenic Cells 4.73E-03 1.03E-02 1.40E-02 2.05E-02 4.35E-02

Spleen 4.41E-02 1.01E-01 1.55E-01 2.35E-01 3.85E-01

Testes 3.98E-04 5.65E-04 9.06E-04 1.42E-03 2.54E-03

Thymus 1.98E-03 5.12E-03 6.89E-03 1.06E-02 1.78E-02

Thyroid 9.33E-04 2.32E-03 3.44E-03 5.13E-03 8.35E-03

Urinary Bladder Wall 5.12E-04 1.43E-03 2.23E-03 3.24E-03 5.35E-03

Uterus 0.00E+00 2.13E-03 3.14E-03 4.58E-03 7.17E-03

Total Body 1.64E-03 4.17E-03 6.38E-03 9.69E-03 1.65E-02

Effective Dose 5.09E-03 1.28E-02 1.81E-02 2.59E-02 4.38E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Small Colloids -

Early to Intermediate Diffuse Parenchymal Liver Disease

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.53E-02 3.08E-02 4.15E-02 5.30E-02 8.95E-02

Brain 8.67E-04 8.34E-04 1.19E-03 1.93E-03 3.79E-03

Esophagus 7.97E-03 1.20E-02 1.69E-02 2.28E-02 3.47E-02

Eyes 8.77E-04 8.52E-04 1.21E-03 1.95E-03 3.79E-03

Gallbladder Wall 2.30E-02 3.70E-02 4.76E-02 6.67E-02 1.01E-01

Left colon 7.05E-03 8.70E-03 1.35E-02 1.83E-02 2.94E-02

Small Intestine 4.80E-03 5.87E-03 8.88E-03 1.25E-02 1.85E-02

Stomach Wall 1.11E-02 1.26E-02 1.80E-02 2.52E-02 3.80E-02

Right colon 7.74E-03 1.13E-02 1.75E-02 2.34E-02 3.43E-02

Rectum 2.30E-03 2.28E-03 3.40E-03 4.57E-03 7.45E-03

Heart Wall 8.08E-03 1.23E-02 1.74E-02 2.37E-02 3.73E-02

Kidneys 1.36E-02 1.63E-02 2.27E-02 3.09E-02 4.61E-02

Liver 5.61E-02 1.00E-01 1.44E-01 1.96E-01 3.07E-01

Lungs 6.60E-03 9.24E-03 1.32E-02 1.77E-02 2.68E-02

Pancreas 1.15E-02 1.47E-02 2.07E-02 2.95E-02 4.92E-02

Prostate 1.68E-03 2.01E-03 3.20E-03 4.58E-03 7.53E-03

Salivary Glands 9.72E-04 9.96E-04 1.51E-03 2.36E-03 4.07E-03

Red Marrow 1.73E-02 1.29E-02 1.86E-02 3.20E-02 7.51E-02

Osteogenic Cells 1.25E-02 1.05E-02 1.42E-02 2.09E-02 4.41E-02

Spleen 1.73E-01 1.01E-01 1.54E-01 2.35E-01 3.85E-01

Testes 4.88E-04 5.65E-04 9.06E-04 1.42E-03 2.54E-03

Thymus 3.51E-03 5.21E-03 6.95E-03 1.13E-02 1.89E-02

Thyroid 1.88E-03 2.44E-03 3.67E-03 5.43E-03 8.83E-03

Urinary Bladder Wall 1.27E-03 1.43E-03 2.26E-03 3.24E-03 5.34E-03

Total Body 3.53E-03 4.02E-03 6.34E-03 9.70E-03 1.63E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.70E-02 3.92E-02 5.46E-02 7.22E-02 1.13E-01

Brain 8.49E-04 8.33E-04 1.18E-03 3.27E-03 5.91E-03

Breasts 2.93E-03 3.08E-03 ----- ----- -----

Esophagus 1.21E-02 1.28E-02 1.91E-02 2.68E-02 4.90E-02

Eyes 8.65E-04 8.43E-04 1.19E-03 1.95E-03 3.81E-03

Gallbladder Wall 2.15E-02 2.29E-02 3.15E-02 4.10E-02 6.77E-02

Left colon 6.84E-03 7.34E-03 1.01E-02 1.41E-02 2.27E-02

Small Intestine 6.16E-03 6.58E-03 9.32E-03 1.33E-02 2.09E-02

Stomach Wall 1.21E-02 1.29E-02 1.79E-02 2.51E-02 3.82E-02

Right colon 7.51E-03 8.24E-03 1.31E-02 1.86E-02 2.76E-02

Rectum 2.03E-03 2.12E-03 3.19E-03 4.33E-03 6.99E-03

Heart Wall 7.48E-03 7.98E-03 1.14E-02 1.63E-02 2.76E-02

Kidneys 1.66E-02 1.80E-02 2.44E-02 3.35E-02 4.83E-02

Liver 9.54E-02 1.01E-01 1.45E-01 1.96E-01 3.10E-01

Lungs 8.64E-03 9.17E-03 1.23E-02 1.70E-02 2.49E-02

Ovaries 2.54E-03 2.69E-03 3.90E-03 5.56E-03 8.47E-03

Pancreas 2.07E-02 2.25E-02 3.11E-02 4.45E-02 6.22E-02

Salivary Glands 9.06E-04 9.51E-04 1.44E-03 2.30E-03 3.92E-03

Red Marrow 1.45E-02 1.28E-02 1.79E-02 3.11E-02 7.39E-02

Osteogenic Cells 1.08E-02 1.01E-02 1.38E-02 2.01E-02 4.29E-02

Spleen 1.00E-01 1.02E-01 1.55E-01 2.36E-01 3.85E-01

Thymus 4.67E-03 5.02E-03 6.83E-03 9.95E-03 1.67E-02

Thyroid 2.07E-03 2.19E-03 3.22E-03 4.83E-03 7.87E-03

Urinary Bladder Wall 1.24E-03 1.43E-03 2.20E-03 3.25E-03 5.35E-03

Uterus 2.03E-03 2.13E-03 3.14E-03 4.58E-03 7.17E-03

Total Body 6.15E-03 4.33E-03 6.42E-03 9.68E-03 1.67E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.11E-02 3.50E-02 4.81E-02 6.26E-02 1.01E-01

Brain 8.58E-04 8.34E-04 1.18E-03 2.60E-03 4.85E-03

Breasts 2.93E-03 3.08E-03 ----- ----- -----

Esophagus 1.00E-02 1.24E-02 1.80E-02 2.48E-02 4.19E-02

Eyes 8.71E-04 8.47E-04 1.20E-03 1.95E-03 3.80E-03

Gallbladder Wall 2.23E-02 3.00E-02 3.95E-02 5.38E-02 8.43E-02

Left colon 6.94E-03 8.02E-03 1.18E-02 1.62E-02 2.60E-02

Small Intestine 5.48E-03 6.23E-03 9.10E-03 1.29E-02 1.97E-02

Stomach Wall 1.16E-02 1.27E-02 1.79E-02 2.52E-02 3.81E-02

Right colon 7.62E-03 9.77E-03 1.53E-02 2.10E-02 3.09E-02

Rectum 2.17E-03 2.20E-03 3.30E-03 4.45E-03 7.22E-03

Heart Wall 7.78E-03 1.01E-02 1.44E-02 2.00E-02 3.24E-02

Kidneys 1.51E-02 1.72E-02 2.36E-02 3.22E-02 4.72E-02

Liver 7.57E-02 1.01E-01 1.45E-01 1.96E-01 3.09E-01

Lungs 7.62E-03 9.21E-03 1.28E-02 1.74E-02 2.59E-02

Ovaries 2.54E-03 2.69E-03 3.90E-03 5.56E-03 8.47E-03

Pancreas 1.61E-02 1.86E-02 2.59E-02 3.70E-02 5.57E-02

Prostate 1.68E-03 2.01E-03 3.20E-03 4.58E-03 7.53E-03

Salivary Glands 9.39E-04 9.74E-04 1.48E-03 2.33E-03 3.99E-03

Red Marrow 1.59E-02 1.29E-02 1.83E-02 3.16E-02 7.45E-02

Osteogenic Cells 1.16E-02 1.03E-02 1.40E-02 2.05E-02 4.35E-02

Spleen 1.36E-01 1.01E-01 1.55E-01 2.35E-01 3.85E-01

Testes 4.88E-04 5.65E-04 9.06E-04 1.42E-03 2.54E-03

Thymus 4.09E-03 5.12E-03 6.89E-03 1.06E-02 1.78E-02

Thyroid 1.97E-03 2.32E-03 3.44E-03 5.13E-03 8.35E-03

Urinary Bladder Wall 1.25E-03 1.43E-03 2.23E-03 3.24E-03 5.35E-03

Uterus 2.03E-03 2.13E-03 3.14E-03 4.58E-03 7.17E-03

Total Body 4.84E-03 4.17E-03 6.38E-03 9.69E-03 1.65E-02

Effective Dose 1.17E-02 1.28E-02 1.81E-02 2.59E-02 4.38E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Small Colloids

Intermediate to Advanced Diffuse Parenchymal Liver Disease

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.55E-02 3.08E-02 4.15E-02 5.30E-02 8.95E-02

Brain 1.19E-03 8.34E-04 1.19E-03 1.93E-03 3.79E-03

Esophagus 6.85E-03 1.20E-02 1.69E-02 2.28E-02 3.47E-02

Eyes 1.19E-03 8.52E-04 1.21E-03 1.95E-03 3.79E-03

Gallbladder Wall 1.52E-02 3.70E-02 4.76E-02 6.67E-02 1.01E-01

Left colon 8.37E-03 8.70E-03 1.35E-02 1.83E-02 2.94E-02

Small Intestine 5.00E-03 5.87E-03 8.88E-03 1.25E-02 1.85E-02

Stomach Wall 1.25E-02 1.26E-02 1.80E-02 2.52E-02 3.80E-02

Right colon 6.26E-03 1.13E-02 1.75E-02 2.34E-02 3.43E-02

Rectum 2.88E-03 2.28E-03 3.40E-03 4.57E-03 7.45E-03

Heart Wall 6.54E-03 1.23E-02 1.74E-02 2.37E-02 3.73E-02

Kidneys 1.42E-02 1.63E-02 2.27E-02 3.09E-02 4.61E-02

Liver 3.49E-02 1.00E-01 1.44E-01 1.96E-01 3.07E-01

Lungs 5.75E-03 9.24E-03 1.32E-02 1.77E-02 2.68E-02

Pancreas 1.11E-02 1.47E-02 2.07E-02 2.95E-02 4.92E-02

Prostate 2.03E-03 2.01E-03 3.20E-03 4.58E-03 7.53E-03

Salivary Glands 1.30E-03 9.96E-04 1.51E-03 2.36E-03 4.07E-03

Red Marrow 2.02E-02 1.29E-02 1.86E-02 3.20E-02 7.51E-02

Osteogenic Cells 1.42E-02 1.05E-02 1.42E-02 2.09E-02 4.41E-02

Spleen 2.58E-01 1.01E-01 1.54E-01 2.35E-01 3.85E-01

Testes 7.42E-04 5.65E-04 9.06E-04 1.42E-03 2.54E-03

Thymus 3.15E-03 5.21E-03 6.95E-03 1.13E-02 1.89E-02

Thyroid 2.01E-03 2.44E-03 3.67E-03 5.43E-03 8.83E-03

Urinary Bladder Wall 1.64E-03 1.43E-03 2.26E-03 3.24E-03 5.34E-03

Total Body 3.78E-03 4.02E-03 6.34E-03 9.70E-03 1.63E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.70E-02 3.92E-02 5.46E-02 7.22E-02 1.13E-01

Brain 8.49E-04 8.33E-04 1.18E-03 3.27E-03 5.91E-03

Breasts 2.93E-03 3.08E-03 ----- ----- -----

Esophagus 1.21E-02 1.28E-02 1.91E-02 2.68E-02 4.90E-02

Eyes 8.65E-04 8.43E-04 1.19E-03 1.95E-03 3.81E-03

Gallbladder Wall 2.15E-02 2.29E-02 3.15E-02 4.10E-02 6.77E-02

Left colon 6.84E-03 7.34E-03 1.01E-02 1.41E-02 2.27E-02

Small Intestine 6.16E-03 6.58E-03 9.32E-03 1.33E-02 2.09E-02

Stomach Wall 1.21E-02 1.29E-02 1.79E-02 2.51E-02 3.82E-02

Right colon 7.51E-03 8.24E-03 1.31E-02 1.86E-02 2.76E-02

Rectum 2.03E-03 2.12E-03 3.19E-03 4.33E-03 6.99E-03

Heart Wall 7.48E-03 7.98E-03 1.14E-02 1.63E-02 2.76E-02

Kidneys 1.66E-02 1.80E-02 2.44E-02 3.35E-02 4.83E-02

Liver 9.54E-02 1.01E-01 1.45E-01 1.96E-01 3.10E-01

Lungs 8.64E-03 9.17E-03 1.23E-02 1.70E-02 2.49E-02

Ovaries 2.54E-03 2.69E-03 3.90E-03 5.56E-03 8.47E-03

Pancreas 2.07E-02 2.25E-02 3.11E-02 4.45E-02 6.22E-02

Salivary Glands 9.06E-04 9.51E-04 1.44E-03 2.30E-03 3.92E-03

Red Marrow 1.45E-02 1.28E-02 1.79E-02 3.11E-02 7.39E-02

Osteogenic Cells 1.08E-02 1.01E-02 1.38E-02 2.01E-02 4.29E-02

Spleen 1.00E-01 1.02E-01 1.55E-01 2.36E-01 3.85E-01

Thymus 4.67E-03 5.02E-03 6.83E-03 9.95E-03 1.67E-02

Thyroid 2.07E-03 2.19E-03 3.22E-03 4.83E-03 7.87E-03

Urinary Bladder Wall 1.24E-03 1.43E-03 2.20E-03 3.25E-03 5.35E-03

Uterus 2.03E-03 2.13E-03 3.14E-03 4.58E-03 7.17E-03

Total Body 6.15E-03 4.33E-03 6.42E-03 9.68E-03 1.67E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.13E-02 3.50E-02 4.81E-02 6.26E-02 1.01E-01

Brain 1.02E-03 8.34E-04 1.18E-03 2.60E-03 4.85E-03

Breasts 2.93E-03 3.08E-03 ----- ----- -----

Esophagus 9.49E-03 1.24E-02 1.80E-02 2.48E-02 4.19E-02

Eyes 1.03E-03 8.47E-04 1.20E-03 1.95E-03 3.80E-03

Gallbladder Wall 1.84E-02 3.00E-02 3.95E-02 5.38E-02 8.43E-02

Left colon 7.60E-03 8.02E-03 1.18E-02 1.62E-02 2.60E-02

Small Intestine 5.58E-03 6.23E-03 9.10E-03 1.29E-02 1.97E-02

Stomach Wall 1.23E-02 1.27E-02 1.79E-02 2.52E-02 3.81E-02

Right colon 6.88E-03 9.77E-03 1.53E-02 2.10E-02 3.09E-02

Rectum 2.45E-03 2.20E-03 3.30E-03 4.45E-03 7.22E-03

Heart Wall 7.01E-03 1.01E-02 1.44E-02 2.00E-02 3.24E-02

Kidneys 1.54E-02 1.72E-02 2.36E-02 3.22E-02 4.72E-02

Liver 6.52E-02 1.01E-01 1.45E-01 1.96E-01 3.09E-01

Lungs 7.19E-03 9.21E-03 1.28E-02 1.74E-02 2.59E-02

Ovaries 2.54E-03 2.69E-03 3.90E-03 5.56E-03 8.47E-03

Pancreas 1.59E-02 1.86E-02 2.59E-02 3.70E-02 5.57E-02

Prostate 2.03E-03 2.01E-03 3.20E-03 4.58E-03 7.53E-03

Salivary Glands 1.10E-03 9.74E-04 1.48E-03 2.33E-03 3.99E-03

Red Marrow 1.74E-02 1.29E-02 1.83E-02 3.16E-02 7.45E-02

Osteogenic Cells 1.25E-02 1.03E-02 1.40E-02 2.05E-02 4.35E-02

Spleen 1.79E-01 1.01E-01 1.55E-01 2.35E-01 3.85E-01

Testes 7.42E-04 5.65E-04 9.06E-04 1.42E-03 2.54E-03

Thymus 3.91E-03 5.12E-03 6.89E-03 1.06E-02 1.78E-02

Thyroid 2.04E-03 2.32E-03 3.44E-03 5.13E-03 8.35E-03

Urinary Bladder Wall 1.44E-03 1.43E-03 2.23E-03 3.24E-03 5.35E-03

Uterus 2.03E-03 2.13E-03 3.14E-03 4.58E-03 7.17E-03

Total Body 4.96E-03 4.17E-03 6.38E-03 1.14E-02 1.65E-02

Effective Dose 1.18E-02 1.28E-02 1.81E-02 2.59E-02 1.65E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Dimercaptosuccinic Acid (DMSA)

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.58E-02 4.53E-02 4.55E-02 8.53E-02 1.22E-01

Brain 1.22E-03 1.53E-03 2.52E-03 4.08E-03 7.07E-03

Esophagus 3.50E-03 4.76E-03 7.49E-03 9.65E-03 1.63E-02

Eyes 1.22E-03 1.53E-03 2.53E-03 4.08E-03 7.12E-03

Gallbladder Wall 8.03E-03 1.04E-02 2.71E-02 2.08E-02 3.12E-02

Left colon 8.14E-03 9.73E-03 1.07E-02 1.69E-02 2.62E-02

Small Intestine 5.78E-03 7.15E-03 1.20E-02 1.58E-02 2.43E-02

Stomach Wall 5.09E-03 6.51E-03 1.13E-02 1.38E-02 2.16E-02

Right colon 6.42E-03 8.31E-03 1.30E-02 1.96E-02 3.04E-02

Rectum 4.27E-03 5.47E-03 1.01E-02 1.25E-02 2.08E-02

Heart Wall 3.19E-03 4.11E-03 5.58E-03 9.05E-03 1.50E-02

Kidneys 1.86E-01 2.24E-01 2.98E-01 4.62E-01 6.90E-01

Liver 1.16E-02 1.51E-02 2.18E-02 2.86E-02 4.46E-02

Lungs 2.75E-03 3.54E-03 5.12E-03 7.80E-03 1.30E-02

Pancreas 7.02E-03 8.67E-03 8.16E-03 1.82E-02 2.73E-02

Prostate 5.21E-03 6.84E-03 1.83E-02 1.40E-02 2.33E-02

Salivary Glands 1.48E-03 1.90E-03 3.04E-03 4.98E-03 8.81E-03

Red Marrow 3.30E-03 3.77E-03 3.73E-03 5.55E-03 8.76E-03

Osteogenic Cells 5.80E-03 5.74E-03 5.46E-03 8.64E-03 1.30E-02

Spleen 1.64E-02 2.00E-02 3.31E-02 4.09E-02 6.31E-02

Testes 1.78E-03 2.22E-03 3.76E-03 5.41E-03 9.34E-03

Thymus 1.95E-03 2.71E-03 3.46E-03 6.31E-03 1.09E-02

Thyroid 1.70E-03 2.21E-03 3.08E-02 5.64E-03 1.00E-02

Urinary Bladder Wall 1.96E-02 2.42E-02 1.28E-02 5.19E-02 9.33E-02

Total Body 3.35E-03 4.07E-03 6.19E-03 9.79E-03 1.64E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.95E-02 3.28E-02 4.55E-02 6.15E-02 9.13E-02

Brain 1.51E-03 1.55E-03 2.52E-03 4.13E-03 7.13E-03

Breasts 1.69E-03 1.84E-03 ----- ----- -----

Esophagus 4.31E-03 4.96E-03 7.49E-03 1.07E-02 1.77E-02

Eyes 1.51E-03 1.56E-03 2.53E-03 4.09E-03 7.07E-03

Gallbladder Wall 1.79E-02 1.95E-02 2.71E-02 3.73E-02 5.41E-02

Left colon 7.62E-03 8.32E-03 1.07E-02 1.57E-02 2.63E-02

Small Intestine 7.75E-03 8.32E-03 1.20E-02 1.76E-02 2.77E-02

Stomach Wall 7.27E-03 7.76E-03 1.13E-02 1.58E-02 2.38E-02

Right colon 7.03E-03 7.92E-03 1.30E-02 1.95E-02 3.15E-02

Rectum 5.85E-03 7.32E-03 1.01E-02 1.42E-02 2.33E-02

Heart Wall 3.53E-03 3.75E-03 5.58E-03 8.31E-03 1.38E-02

Kidneys 2.05E-01 2.31E-01 2.98E-01 4.60E-01 6.87E-01

Liver 1.45E-02 1.55E-02 2.18E-02 2.93E-02 4.54E-02

Lungs 3.39E-03 3.52E-03 5.12E-03 7.58E-03 1.21E-02

Ovaries 4.97E-03 5.94E-03 8.16E-03 1.31E-02 2.21E-02

Pancreas 1.17E-02 1.30E-02 1.83E-02 2.63E-02 3.62E-02

Salivary Glands 1.60E-03 1.92E-03 3.04E-03 4.93E-03 8.75E-03

Red Marrow 4.17E-03 3.59E-03 3.73E-03 4.17E-03 5.59E-03

Osteogenic Cells 6.42E-03 5.31E-03 5.46E-03 5.54E-03 6.08E-03

Spleen 2.24E-02 2.36E-02 3.31E-02 4.75E-02 7.34E-02

Thymus 2.21E-03 2.66E-03 3.76E-03 5.98E-03 1.04E-02

Thyroid 1.81E-03 2.16E-03 3.46E-03 5.55E-03 9.62E-03

Urinary Bladder Wall 2.11E-02 2.14E-02 3.08E-02 4.61E-02 8.24E-02

Uterus 6.36E-03 8.00E-03 1.28E-02 1.81E-02 2.77E-02

Total Body 4.88E-03 4.13E-03 6.19E-03 9.48E-03 1.61E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.26E-02 3.90E-02 5.38E-02 7.34E-02 1.07E-01

Brain 1.37E-03 1.54E-03 2.52E-03 4.11E-03 7.10E-03

Breasts 1.69E-03 1.84E-03 ----- ----- -----

Esophagus 3.91E-03 4.86E-03 7.31E-03 1.02E-02 1.70E-02

Eyes 1.37E-03 1.55E-03 2.52E-03 4.09E-03 7.10E-03

Gallbladder Wall 1.30E-02 1.50E-02 2.07E-02 2.90E-02 4.27E-02

Left colon 7.88E-03 9.03E-03 1.14E-02 1.63E-02 2.62E-02

Small Intestine 6.77E-03 7.74E-03 1.14E-02 1.67E-02 2.60E-02

Stomach Wall 6.18E-03 7.13E-03 1.06E-02 1.48E-02 2.27E-02

Right colon 6.73E-03 8.12E-03 1.33E-02 1.96E-02 3.10E-02

Rectum 5.06E-03 6.39E-03 9.35E-03 1.33E-02 2.20E-02

Heart Wall 3.36E-03 3.93E-03 5.90E-03 8.68E-03 1.44E-02

Kidneys 1.95E-01 2.28E-01 2.98E-01 4.61E-01 6.89E-01

Liver 1.31E-02 1.53E-02 2.15E-02 2.90E-02 4.50E-02

Lungs 3.07E-03 3.53E-03 5.20E-03 7.69E-03 1.25E-02

Ovaries 4.97E-03 5.94E-03 8.16E-03 1.31E-02 2.21E-02

Pancreas 9.37E-03 1.08E-02 1.55E-02 2.23E-02 3.17E-02

Prostate 5.21E-03 6.84E-03 1.49E-02 1.40E-02 2.33E-02

Salivary Glands 1.54E-03 1.91E-03 3.06E-03 4.95E-03 8.78E-03

Red Marrow 3.73E-03 3.68E-03 5.21E-03 4.86E-03 7.18E-03

Osteogenic Cells 6.11E-03 5.53E-03 7.12E-03 7.09E-03 9.55E-03

Spleen 1.94E-02 2.18E-02 3.10E-02 4.42E-02 6.83E-02

Testes 1.78E-03 2.22E-03 4.13E-03 5.41E-03 9.34E-03

Thymus 2.08E-03 2.68E-03 3.80E-03 6.15E-03 1.07E-02

Thyroid 1.76E-03 2.19E-03 3.52E-03 5.59E-03 9.82E-03

Urinary Bladder Wall 2.04E-02 2.28E-02 3.32E-02 4.90E-02 8.78E-02

Uterus 6.36E-03 8.00E-03 1.28E-02 1.81E-02 2.77E-02

Total Body 4.11E-03 4.10E-03 6.26E-03 9.63E-03 1.63E-02

Effective Dose 7.24E-03 8.33E-03 1.95E-02 2.89E-02 5.12E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Diethylenetriaminepentaacetic Acid (DTPA) - Normal Renal Function

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.92E-03 2.44E-03 3.58E-03 5.12E-03 8.28E-03

Brain 8.68E-04 1.08E-03 1.78E-03 2.86E-03 4.92E-03

Esophagus 1.08E-03 1.38E-03 2.21E-03 3.51E-03 6.13E-03

Eyes 8.68E-04 1.08E-03 1.78E-03 2.86E-03 4.96E-03

Gallbladder Wall 1.45E-03 1.96E-03 3.18E-03 4.72E-03 5.70E-03

Left colon 1.80E-03 2.23E-03 3.23E-03 4.55E-03 7.52E-03

Small Intestine 2.67E-03 3.31E-03 5.22E-03 7.22E-03 9.78E-03

Stomach Wall 1.23E-03 1.63E-03 2.64E-03 3.71E-03 6.29E-03

Right colon 1.83E-03 2.37E-03 3.44E-03 4.88E-03 7.31E-03

Rectum 6.33E-03 8.14E-03 1.30E-02 1.63E-02 1.90E-02

Heart Wall 1.18E-03 1.49E-03 2.27E-03 3.38E-03 5.85E-03

Kidneys 4.56E-03 5.55E-03 7.64E-03 1.16E-02 1.74E-02

Liver 1.27E-03 1.62E-03 2.52E-03 3.72E-03 6.26E-03

Lungs 1.03E-03 1.34E-03 2.01E-03 3.08E-03 5.40E-03

Pancreas 1.45E-03 1.84E-03 2.80E-03 4.25E-03 6.96E-03

Prostate 8.33E-03 1.08E-02 3.37E-02 1.76E-02 2.02E-02

Salivary Glands 1.04E-03 1.32E-03 2.10E-03 3.38E-03 5.93E-03

Red Marrow 1.77E-03 2.16E-03 2.80E-03 3.50E-03 5.65E-03

Osteogenic Cells 2.71E-03 2.91E-03 3.83E-03 4.90E-03 8.03E-03

Spleen 1.36E-03 1.73E-03 2.70E-03 3.98E-03 6.69E-03

Testes 2.48E-03 3.10E-03 7.44E-03 6.37E-03 8.39E-03

Thymus 1.03E-03 1.32E-03 1.98E-03 3.08E-03 5.45E-03

Thyroid 1.04E-03 1.33E-03 2.12E-03 3.40E-03 5.97E-03

Urinary Bladder Wall 6.67E-02 8.10E-02 1.19E-01 1.51E-01 1.75E-01

Total Body 1.76E-03 2.15E-03 3.34E-03 4.89E-03 7.19E-03

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.04E-03 2.18E-03 3.17E-03 4.77E-03 9.13E-02

Brain 1.07E-03 1.10E-03 1.78E-03 2.85E-03 7.13E-03

Breasts 9.12E-04 9.75E-04 ----- ----- -----

Esophagus 1.17E-03 1.42E-03 2.25E-03 3.55E-03 1.77E-02

Eyes 1.07E-03 1.10E-03 1.78E-03 2.86E-03 7.07E-03

Gallbladder Wall 2.13E-03 2.39E-03 3.71E-03 5.43E-03 5.41E-02

Left colon 2.56E-03 3.02E-03 4.70E-03 7.35E-03 2.63E-02

Small Intestine 3.21E-03 3.55E-03 5.21E-03 7.69E-03 2.77E-02

Stomach Wall 1.55E-03 1.71E-03 2.70E-03 3.85E-03 2.38E-02

Right colon 2.06E-03 2.25E-03 3.44E-03 5.18E-03 3.15E-02

Rectum 1.28E-02 1.74E-02 2.21E-02 2.90E-02 2.33E-02

Heart Wall 1.45E-03 1.50E-03 2.24E-03 3.36E-03 1.38E-02

Kidneys 5.07E-03 5.65E-03 7.50E-03 1.16E-02 6.87E-01

Liver 1.57E-03 1.64E-03 2.51E-03 3.77E-03 4.54E-02

Lungs 1.34E-03 1.35E-03 2.00E-03 3.06E-03 1.21E-02

Ovaries 6.43E-03 8.69E-03 1.01E-02 1.74E-02 2.21E-02

Pancreas 1.85E-03 1.98E-03 2.96E-03 4.60E-03 3.62E-02

Salivary Glands 1.11E-03 1.34E-03 2.12E-03 3.39E-03 8.75E-03

Red Marrow 2.00E-03 1.95E-03 2.15E-03 2.56E-03 5.59E-03

Osteogenic Cells 2.93E-03 2.75E-03 2.81E-03 2.95E-03 6.08E-03

Spleen 1.72E-03 1.82E-03 2.76E-03 4.11E-03 7.34E-02

Thymus 1.28E-03 1.34E-03 1.96E-03 3.06E-03 1.04E-02

Thyroid 1.11E-03 1.34E-03 2.11E-03 3.38E-03 9.62E-03

Urinary Bladder Wall 7.13E-02 7.16E-02 1.03E-01 1.54E-01 8.24E-02

Uterus 1.32E-02 1.78E-02 2.83E-02 3.68E-02 2.77E-02

Total Body 2.25E-03 2.15E-03 3.24E-03 4.97E-03 1.61E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.98E-03 2.31E-03 3.37E-03 4.94E-03 4.86E-03

Brain 9.70E-04 1.09E-03 1.78E-03 2.85E-03 2.85E-03

Breasts 9.12E-04 9.75E-04 ----- ----- -----

Esophagus 1.13E-03 1.40E-03 2.23E-03 3.53E-03 3.52E-03

Eyes 9.70E-04 1.09E-03 1.78E-03 2.86E-03 2.86E-03

Gallbladder Wall 1.79E-03 2.18E-03 3.44E-03 5.07E-03 4.98E-03

Left colon 2.18E-03 2.63E-03 3.96E-03 5.95E-03 5.81E-03

Small Intestine 2.94E-03 3.43E-03 5.21E-03 7.46E-03 6.84E-03

Stomach Wall 1.39E-03 1.67E-03 2.67E-03 3.78E-03 3.74E-03

Right colon 1.95E-03 2.31E-03 3.44E-03 5.03E-03 4.86E-03

Rectum 9.55E-03 1.28E-02 1.76E-02 2.26E-02 2.03E-02

Heart Wall 1.32E-03 1.50E-03 2.25E-03 3.37E-03 3.35E-03

Kidneys 4.81E-03 5.60E-03 7.57E-03 1.16E-02 1.15E-02

Liver 1.42E-03 1.63E-03 2.51E-03 3.74E-03 3.69E-03

Lungs 1.19E-03 1.34E-03 2.00E-03 3.07E-03 3.06E-03

Ovaries 6.43E-03 8.69E-03 1.01E-02 1.74E-02 1.74E-02

Pancreas 1.65E-03 1.91E-03 2.88E-03 4.42E-03 4.35E-03

Prostate 8.33E-03 1.08E-02 3.37E-02 1.76E-02 1.25E-02

Salivary Glands 1.08E-03 1.33E-03 2.11E-03 3.38E-03 3.38E-03

Red Marrow 1.88E-03 2.05E-03 2.48E-03 3.03E-03 2.91E-03

Osteogenic Cells 2.82E-03 2.83E-03 3.32E-03 3.92E-03 3.82E-03

Spleen 1.54E-03 1.78E-03 2.73E-03 4.05E-03 3.99E-03

Testes 2.48E-03 3.10E-03 7.44E-03 6.37E-03 5.04E-03

Thymus 1.16E-03 1.33E-03 1.97E-03 3.07E-03 3.06E-03

Thyroid 1.08E-03 1.33E-03 2.11E-03 3.39E-03 3.38E-03

Urinary Bladder Wall 6.90E-02 7.63E-02 1.11E-01 1.52E-01 1.26E-01

Uterus 1.32E-02 1.78E-02 2.83E-02 3.68E-02 3.68E-02

Total Body 2.00E-03 2.15E-03 3.29E-03 4.93E-03 4.59E-03

Effective Dose 4.57E-03 5.21E-03 7.53E-03 1.04E-02 9.09E-03

Radiation Dose Estimates (mSv/MBq) for 99mTc Diethylenetriaminepentaacetic Acid (DTPA) - Abnormal Renal Function

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 4.67E-03 5.83E-03 8.57E-03 1.27E-02 2.17E-02

Brain 2.83E-03 3.54E-03 5.79E-03 9.31E-03 1.60E-02

Esophagus 3.42E-03 4.35E-03 6.93E-03 1.11E-02 1.95E-02

Eyes 2.83E-03 3.54E-03 5.79E-03 9.34E-03 1.62E-02

Gallbladder Wall 4.23E-03 5.69E-03 9.16E-03 1.35E-02 1.63E-02

Left colon 4.27E-03 5.38E-03 8.36E-03 1.21E-02 2.16E-02

Small Intestine 4.56E-03 5.69E-03 8.66E-03 1.30E-02 2.17E-02

Stomach Wall 3.76E-03 4.98E-03 7.99E-03 1.12E-02 1.93E-02

Right colon 4.22E-03 5.51E-03 8.03E-03 1.27E-02 2.02E-02

Rectum 5.47E-03 6.95E-03 1.10E-02 1.52E-02 2.47E-02

Heart Wall 3.76E-03 4.72E-03 7.10E-03 1.06E-02 1.85E-02

Kidneys 7.79E-03 9.44E-03 1.30E-02 1.98E-02 3.07E-02

Liver 3.76E-03 4.71E-03 7.28E-03 1.08E-02 1.88E-02

Lungs 3.30E-03 4.25E-03 6.35E-03 9.72E-03 1.72E-02

Pancreas 4.28E-03 5.36E-03 8.01E-03 1.22E-02 2.09E-02

Prostate 5.93E-03 8.02E-03 1.64E-02 1.49E-02 2.42E-02

Salivary Glands 3.38E-03 4.29E-03 6.85E-03 1.10E-02 1.93E-02

Red Marrow 3.39E-03 4.15E-03 6.31E-03 9.33E-03 1.72E-02

Osteogenic Cells 5.87E-03 6.85E-03 1.00E-02 1.42E-02 2.53E-02

Spleen 3.85E-03 4.85E-03 7.49E-03 1.11E-02 1.94E-02

Testes 3.44E-03 4.25E-03 7.15E-03 9.80E-03 1.66E-02

Thymus 3.34E-03 4.26E-03 6.33E-03 9.84E-03 1.75E-02

Thyroid 3.39E-03 4.30E-03 6.86E-03 1.10E-02 1.93E-02

Urinary Bladder Wall 2.28E-02 2.83E-02 4.12E-02 5.21E-02 6.99E-02

Total Body 3.48E-03 4.26E-03 6.57E-03 1.02E-02 1.75E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.38E-03 5.59E-03 8.18E-03 1.22E-02 2.11E-02

Brain 3.50E-03 3.60E-03 5.79E-03 9.31E-03 1.60E-02

Breasts 2.95E-03 3.15E-03 ----- ----- -----

Esophagus 3.67E-03 4.41E-03 6.94E-03 1.11E-02 1.94E-02

Eyes 3.50E-03 3.60E-03 5.79E-03 9.31E-03 1.60E-02

Gallbladder Wall 5.46E-03 6.03E-03 9.52E-03 1.40E-02 1.69E-02

Left colon 5.28E-03 5.62E-03 8.75E-03 1.29E-02 2.27E-02

Small Intestine 5.26E-03 5.82E-03 8.68E-03 1.32E-02 2.19E-02

Stomach Wall 4.68E-03 5.08E-03 8.03E-03 1.12E-02 1.94E-02

Right colon 5.13E-03 5.53E-03 8.03E-03 1.27E-02 2.04E-02

Rectum 8.10E-03 9.59E-03 1.36E-02 1.88E-02 2.98E-02

Heart Wall 4.65E-03 4.78E-03 7.09E-03 1.06E-02 1.84E-02

Kidneys 8.86E-03 9.62E-03 1.29E-02 1.97E-02 3.06E-02

Liver 4.61E-03 4.77E-03 7.29E-03 1.09E-02 1.88E-02

Lungs 4.29E-03 4.31E-03 6.34E-03 9.68E-03 1.71E-02

Ovaries 6.41E-03 7.28E-03 9.98E-03 1.58E-02 2.67E-02

Pancreas 5.30E-03 5.52E-03 8.13E-03 1.24E-02 2.11E-02

Salivary Glands 3.62E-03 4.35E-03 6.85E-03 1.10E-02 1.93E-02

Red Marrow 4.03E-03 4.11E-03 4.82E-03 6.25E-03 1.01E-02

Osteogenic Cells 6.77E-03 6.87E-03 7.33E-03 8.06E-03 1.01E-02

Spleen 4.80E-03 4.99E-03 7.57E-03 1.13E-02 1.96E-02

Thymus 4.17E-03 4.31E-03 6.32E-03 9.80E-03 1.75E-02

Thyroid 3.62E-03 4.35E-03 6.86E-03 1.10E-02 1.93E-02

Urinary Bladder Wall 2.52E-02 2.57E-02 3.68E-02 5.47E-02 8.60E-02

Uterus 8.25E-03 9.85E-03 1.52E-02 2.14E-02 3.22E-02

Total Body 4.25E-03 4.31E-03 6.54E-03 1.02E-02 1.77E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.02E-03 5.71E-03 8.37E-03 1.24E-02 2.14E-02

Brain 3.17E-03 3.57E-03 ----- ----- -----

Esophagus 3.55E-03 4.38E-03 6.94E-03 1.11E-02 1.95E-02

Eyes 3.17E-03 3.57E-03 5.79E-03 9.32E-03 1.61E-02

Gallbladder Wall 4.84E-03 5.86E-03 9.34E-03 1.37E-02 1.66E-02

Left colon 4.78E-03 5.50E-03 8.55E-03 1.25E-02 2.22E-02

Small Intestine 4.91E-03 5.76E-03 8.67E-03 1.31E-02 2.18E-02

Stomach Wall 4.22E-03 5.03E-03 8.01E-03 1.12E-02 1.94E-02

Right colon 4.67E-03 5.52E-03 8.03E-03 1.27E-02 2.03E-02

Rectum 6.78E-03 8.27E-03 1.23E-02 1.70E-02 2.72E-02

Heart Wall 4.20E-03 4.75E-03 7.09E-03 1.06E-02 1.85E-02

Kidneys 8.33E-03 9.53E-03 1.29E-02 1.97E-02 3.07E-02

Liver 4.18E-03 4.74E-03 7.29E-03 1.08E-02 1.88E-02

Lungs 3.80E-03 4.28E-03 6.34E-03 9.70E-03 1.71E-02

Ovaries 6.41E-03 7.28E-03 9.98E-03 1.58E-02 2.67E-02

Pancreas 4.79E-03 5.44E-03 8.07E-03 1.23E-02 2.10E-02

Prostate 5.93E-03 8.02E-03 1.64E-02 1.49E-02 2.42E-02

Salivary Glands 3.50E-03 4.32E-03 6.85E-03 1.10E-02 1.93E-02

Red Marrow 3.71E-03 4.13E-03 5.57E-03 7.79E-03 1.36E-02

Osteogenic Cells 6.32E-03 6.86E-03 8.67E-03 1.12E-02 1.77E-02

Spleen 4.33E-03 4.92E-03 7.53E-03 1.12E-02 1.95E-02

Testes 3.44E-03 4.25E-03 7.15E-03 9.80E-03 1.66E-02

Thymus 3.75E-03 4.28E-03 6.33E-03 9.82E-03 1.75E-02

Thyroid 3.50E-03 4.32E-03 6.86E-03 1.10E-02 1.93E-02

Urinary Bladder Wall 2.40E-02 2.70E-02 3.90E-02 5.34E-02 7.80E-02

Uterus 8.25E-03 9.85E-03 1.52E-02 2.14E-02 3.22E-02

Total Body 3.86E-03 4.29E-03 6.56E-03 1.02E-02 1.76E-02

Effective Dose 4.55E-03 5.24E-03 7.49E-03 1.09E-02 1.80E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Ethylenedicysteine (ECD)

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.65E-03 7.04E-03 9.64E-03 1.31E-02 2.00E-02

Brain 4.86E-03 8.08E-03 1.35E-02 1.86E-02 3.04E-02

Esophagus 2.15E-03 2.83E-03 4.20E-03 5.86E-03 9.18E-03

Eyes 1.42E-03 2.12E-03 3.60E-03 4.73E-03 8.38E-03

Gallbladder Wall 3.42E-02 4.23E-02 6.60E-02 1.05E-01 1.79E-01

Left colon 2.79E-02 3.49E-02 5.73E-02 8.01E-02 1.05E-01

Small Intestine 1.74E-02 2.09E-02 3.14E-02 4.32E-02 5.67E-02

Stomach Wall 2.78E-03 3.87E-03 5.61E-03 7.50E-03 1.16E-02

Right colon 3.90E-02 4.56E-02 7.00E-02 9.67E-02 1.19E-01

Rectum 1.74E-02 2.32E-02 3.60E-02 4.84E-02 6.46E-02

Heart Wall 2.35E-03 2.93E-03 4.09E-03 5.62E-03 8.97E-03

Kidneys 9.71E-03 1.18E-02 1.62E-02 2.41E-02 3.57E-02

Liver 6.41E-03 8.23E-03 1.19E-02 1.61E-02 2.46E-02

Lungs 2.29E-03 2.92E-03 4.44E-03 6.61E-03 1.15E-02

Pancreas 6.27E-03 7.33E-03 9.44E-03 1.29E-02 1.86E-02

Prostate 8.70E-03 1.15E-02 3.14E-02 1.79E-02 2.24E-02

Salivary Glands 1.58E-03 2.32E-03 4.42E-03 6.50E-03 1.08E-02

Red Marrow 2.40E-03 2.92E-03 3.55E-03 3.84E-03 5.03E-03

Osteogenic Cells 4.02E-03 4.26E-03 4.72E-03 5.76E-03 7.57E-03

Spleen 2.75E-03 3.38E-03 4.58E-03 6.29E-03 9.71E-03

Testes 2.28E-03 2.85E-03 6.03E-03 5.29E-03 6.83E-03

Thymus 1.46E-03 1.93E-03 2.65E-03 4.08E-03 6.83E-03

Thyroid 6.36E-03 9.98E-03 1.49E-02 3.19E-02 5.69E-02

Urinary Bladder Wall 5.47E-02 6.67E-02 9.00E-02 1.10E-01 1.28E-01

Total Body 2.56E-03 3.13E-03 4.76E-03 6.93E-03 1.07E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.18E-03 5.69E-03 8.04E-03 1.08E-02 1.65E-02

Brain 5.36E-03 8.53E-03 1.50E-02 2.00E-02 3.02E-02

Breasts 1.18E-03 1.23E-03 ----- ----- -----

Esophagus 2.20E-03 2.55E-03 3.79E-03 5.16E-03 8.62E-03

Eyes 1.77E-03 2.38E-03 4.56E-03 6.28E-03 9.00E-03

Gallbladder Wall 3.88E-02 4.29E-02 6.48E-02 1.02E-01 1.74E-01

Left colon 2.52E-02 3.38E-02 5.50E-02 7.66E-02 9.88E-02

Small Intestine 2.01E-02 2.07E-02 3.07E-02 4.23E-02 5.58E-02

Stomach Wall 3.56E-03 3.93E-03 5.53E-03 7.47E-03 1.12E-02

Right colon 4.05E-02 4.53E-02 7.08E-02 9.79E-02 1.24E-01

Rectum 1.99E-02 3.04E-02 4.28E-02 5.45E-02 7.04E-02

Heart Wall 2.19E-03 2.25E-03 3.08E-03 4.34E-03 6.95E-03

Kidneys 1.13E-02 1.25E-02 1.68E-02 2.50E-02 3.74E-02

Liver 7.06E-03 7.37E-03 1.07E-02 1.46E-02 2.28E-02

Lungs 2.66E-03 2.91E-03 4.07E-03 6.14E-03 1.06E-02

Ovaries 8.11E-03 1.05E-02 1.23E-02 1.83E-02 2.55E-02

Pancreas 6.09E-03 6.52E-03 8.81E-03 1.24E-02 1.74E-02

Salivary Glands 1.70E-03 2.39E-03 4.48E-03 6.43E-03 9.45E-03

Red Marrow 2.91E-03 2.63E-03 2.68E-03 2.95E-03 3.20E-03

Osteogenic Cells 4.63E-03 4.14E-03 4.13E-03 3.32E-03 4.18E-03

Spleen 3.68E-03 3.91E-03 5.08E-03 7.10E-03 1.09E-02

Thymus 1.77E-03 1.84E-03 2.58E-03 3.78E-03 6.22E-03

Thyroid 7.27E-03 9.96E-03 1.48E-02 3.16E-02 5.69E-02

Urinary Bladder Wall 5.90E-02 6.00E-02 7.93E-02 9.97E-02 1.16E-01

Uterus 1.44E-02 1.95E-02 3.01E-02 3.51E-02 4.09E-02

Total Body 3.76E-03 3.19E-03 4.67E-03 6.74E-03 1.06E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.42E-03 6.37E-03 8.84E-03 1.20E-02 1.83E-02

Brain 5.11E-03 8.31E-03 1.43E-02 1.93E-02 3.03E-02

Breasts 1.18E-03 1.23E-03 ----- ----- -----

Esophagus 2.18E-03 2.69E-03 4.00E-03 5.51E-03 8.90E-03

Eyes 1.60E-03 2.25E-03 4.08E-03 5.51E-03 8.69E-03

Gallbladder Wall 3.65E-02 4.26E-02 6.54E-02 1.04E-01 1.77E-01

Left colon 2.66E-02 3.44E-02 5.62E-02 7.84E-02 1.02E-01

Small Intestine 1.88E-02 2.08E-02 3.11E-02 4.28E-02 5.63E-02

Stomach Wall 3.17E-03 3.90E-03 5.57E-03 7.49E-03 1.14E-02

Right colon 3.98E-02 4.55E-02 7.04E-02 9.73E-02 1.22E-01

Rectum 1.87E-02 2.68E-02 3.94E-02 5.15E-02 6.75E-02

Heart Wall 2.27E-03 2.59E-03 3.59E-03 4.98E-03 7.96E-03

Kidneys 1.05E-02 1.22E-02 1.65E-02 2.46E-02 3.66E-02

Liver 6.74E-03 7.80E-03 1.13E-02 1.54E-02 2.37E-02

Lungs 2.48E-03 2.92E-03 4.26E-03 6.38E-03 1.11E-02

Ovaries 8.11E-03 1.05E-02 1.23E-02 1.83E-02 2.55E-02

Pancreas 6.18E-03 6.93E-03 9.13E-03 1.27E-02 1.80E-02

Prostate 8.70E-03 1.15E-02 3.14E-02 1.79E-02 2.24E-02

Salivary Glands 1.64E-03 2.36E-03 4.45E-03 6.47E-03 1.01E-02

Red Marrow 2.66E-03 2.78E-03 3.12E-03 3.40E-03 4.12E-03

Osteogenic Cells 4.33E-03 4.20E-03 4.43E-03 4.54E-03 5.88E-03

Spleen 3.22E-03 3.65E-03 4.83E-03 6.70E-03 1.03E-02

Testes 2.28E-03 2.85E-03 6.03E-03 5.29E-03 6.83E-03

Thymus 1.62E-03 1.89E-03 2.62E-03 3.93E-03 6.53E-03

Thyroid 6.82E-03 9.97E-03 1.49E-02 3.18E-02 5.69E-02

Urinary Bladder Wall 5.69E-02 6.34E-02 8.47E-02 1.05E-01 1.22E-01

Uterus 1.44E-02 1.95E-02 3.01E-02 3.51E-02 4.09E-02

Total Body 3.16E-03 3.16E-03 4.72E-03 6.84E-03 1.07E-02

Effective Dose 9.20E-03 1.10E-02 1.60E-02 2.18E-02 2.94E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Furifosmin - Rest

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.63E-03 1.07E-02 1.46E-02 2.06E-02 3.24E-02

Brain 1.61E-03 2.01E-03 3.31E-03 5.35E-03 9.27E-03

Esophagus 3.97E-03 5.19E-03 7.89E-03 1.17E-02 1.95E-02

Eyes 1.61E-03 2.02E-03 3.32E-03 5.38E-03 9.38E-03

Gallbladder Wall 5.87E-02 7.29E-02 1.15E-01 1.85E-01 3.15E-01

Left colon 5.30E-02 6.36E-02 1.04E-01 1.47E-01 1.83E-01

Small Intestine 2.27E-02 2.71E-02 4.12E-02 5.78E-02 7.79E-02

Stomach Wall 5.12E-03 6.97E-03 1.03E-02 1.42E-02 2.27E-02

Right colon 4.02E-02 4.60E-02 7.10E-02 9.92E-02 1.20E-01

Rectum 1.90E-02 2.38E-02 3.78E-02 5.25E-02 6.94E-02

Heart Wall 8.67E-03 1.14E-02 1.75E-02 2.66E-02 4.46E-02

Kidneys 1.50E-02 1.82E-02 2.48E-02 3.73E-02 5.58E-02

Liver 8.58E-03 1.10E-02 1.60E-02 2.17E-02 3.34E-02

Lungs 5.56E-03 7.12E-03 1.13E-02 1.73E-02 3.13E-02

Pancreas 9.78E-03 1.14E-02 1.52E-02 2.15E-02 3.22E-02

Prostate 6.76E-03 9.09E-03 2.17E-02 1.70E-02 2.55E-02

Salivary Glands 1.97E-03 2.51E-03 4.03E-03 6.50E-03 1.15E-02

Red Marrow 3.13E-03 3.68E-03 4.89E-03 6.36E-03 1.07E-02

Osteogenic Cells 5.16E-03 5.51E-03 7.34E-03 9.55E-03 1.58E-02

Spleen 4.69E-03 5.78E-03 8.11E-03 1.17E-02 1.91E-02

Testes 2.33E-03 2.95E-03 5.36E-03 6.89E-03 1.13E-02

Thymus 3.21E-03 4.31E-03 5.92E-03 9.39E-03 1.60E-02

Thyroid 2.44E-03 3.16E-03 4.97E-03 7.89E-03 1.35E-02

Urinary Bladder Wall 2.39E-02 2.97E-02 4.36E-02 5.55E-02 7.03E-02

Total Body 3.38E-03 4.10E-03 6.37E-03 9.79E-03 1.62E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.29E-03 8.87E-03 1.28E-02 1.76E-02 2.80E-02

Brain 1.99E-03 2.04E-03 3.31E-03 5.35E-03 9.24E-03

Breasts 2.26E-03 2.42E-03 ----- ----- -----

Esophagus 4.30E-03 5.00E-03 7.58E-03 1.10E-02 1.93E-02

Eyes 1.99E-03 2.05E-03 3.31E-03 5.35E-03 9.28E-03

Gallbladder Wall 6.84E-02 7.48E-02 1.13E-01 1.80E-01 3.08E-01

Left colon 5.81E-02 6.17E-02 1.01E-01 1.41E-01 1.74E-01

Small Intestine 2.68E-02 2.68E-02 4.06E-02 5.71E-02 7.78E-02

Stomach Wall 6.45E-03 6.78E-03 9.93E-03 1.38E-02 2.18E-02

Right colon 4.88E-02 4.49E-02 6.98E-02 9.71E-02 1.19E-01

Rectum 2.53E-02 2.63E-02 4.03E-02 5.42E-02 7.13E-02

Heart Wall 1.02E-02 1.11E-02 1.97E-02 2.51E-02 3.05E-02

Kidneys 1.79E-02 1.94E-02 2.58E-02 3.89E-02 5.85E-02

Liver 9.45E-03 9.61E-03 1.40E-02 1.92E-02 3.03E-02

Lungs 6.68E-03 7.59E-03 1.07E-02 1.66E-02 3.00E-02

Ovaries 8.53E-03 9.31E-03 1.27E-02 1.94E-02 2.97E-02

Pancreas 9.45E-03 9.78E-03 1.38E-02 2.00E-02 2.93E-02

Salivary Glands 2.12E-03 2.54E-03 4.02E-03 6.46E-03 1.14E-02

Red Marrow 4.16E-03 3.63E-03 3.93E-03 4.59E-03 6.49E-03

Osteogenic Cells 6.37E-03 5.58E-03 5.65E-03 5.92E-03 6.83E-03

Spleen 6.67E-03 6.68E-03 9.04E-03 1.31E-02 2.11E-02

Thymus 3.95E-03 4.10E-03 5.82E-03 8.69E-03 1.46E-02

Thyroid 2.62E-03 3.14E-03 4.83E-03 7.54E-03 1.29E-02

Urinary Bladder Wall 2.75E-02 2.79E-02 3.99E-02 5.20E-02 6.66E-02

Uterus 1.24E-02 1.41E-02 2.34E-02 3.00E-02 4.02E-02

Total Body 5.07E-03 4.24E-03 6.37E-03 9.71E-03 1.62E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.34E-03 8.84E-03 1.37E-02 1.91E-02 3.02E-02

Brain 1.80E-03 2.02E-03 3.31E-03 5.35E-03 9.26E-03

Breasts 2.23E-03 2.24E-03 ----- ----- -----

Esophagus 4.10E-03 4.85E-03 7.73E-03 1.13E-02 1.94E-02

Eyes 1.80E-03 2.02E-03 3.31E-03 5.37E-03 9.33E-03

Gallbladder Wall 6.30E-02 7.09E-02 1.14E-01 1.82E-01 3.12E-01

Left colon 5.17E-02 3.42E-02 1.03E-01 1.44E-01 1.79E-01

Small Intestine 2.44E-02 1.60E-02 4.09E-02 5.75E-02 7.78E-02

Stomach Wall 5.65E-03 5.54E-03 1.01E-02 1.40E-02 2.23E-02

Right colon 3.91E-02 2.56E-02 7.04E-02 9.81E-02 1.19E-01

Rectum 1.99E-02 1.58E-02 3.90E-02 5.33E-02 7.03E-02

Heart Wall 9.41E-03 1.11E-02 1.86E-02 2.58E-02 3.75E-02

Kidneys 1.63E-02 1.74E-02 2.53E-02 3.81E-02 5.71E-02

Liver 8.88E-03 9.57E-03 1.50E-02 2.05E-02 3.19E-02

Lungs 6.10E-03 7.20E-03 1.10E-02 1.69E-02 3.06E-02

Ovaries 7.95E-03 5.44E-03 1.27E-02 1.94E-02 2.97E-02

Pancreas 9.40E-03 8.62E-03 1.45E-02 2.07E-02 3.08E-02

Prostate 6.76E-03 9.09E-03 2.17E-02 1.70E-02 2.55E-02

Salivary Glands 2.04E-03 2.51E-03 4.02E-03 6.48E-03 1.15E-02

Red Marrow 3.56E-03 3.28E-03 4.41E-03 5.47E-03 8.59E-03

Osteogenic Cells 5.66E-03 5.04E-03 6.49E-03 7.73E-03 1.13E-02

Spleen 5.50E-03 4.98E-03 8.58E-03 1.24E-02 2.01E-02

Testes 2.33E-03 2.95E-03 5.36E-03 6.89E-03 1.13E-02

Thymus 3.57E-03 4.12E-03 5.87E-03 9.04E-03 1.53E-02

Thyroid 2.53E-03 3.11E-03 4.90E-03 7.72E-03 1.32E-02

Urinary Bladder Wall 2.55E-02 2.73E-02 4.18E-02 5.38E-02 6.84E-02

Uterus 1.14E-02 8.20E-03 2.34E-02 3.00E-02 4.02E-02

Total Body 4.09E-03 3.60E-03 6.37E-03 9.75E-03 1.62E-02

Effective Dose 1.06E-02 9.16E-03 1.88E-02 2.65E-02 3.72E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Furifosmin - Stress

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.31E-03 1.03E-02 1.42E-02 2.00E-02 3.18E-02

Brain 1.89E-03 2.36E-03 3.88E-03 6.27E-03 1.08E-02

Esophagus 4.09E-03 5.32E-03 8.13E-03 1.22E-02 2.06E-02

Eyes 1.89E-03 2.36E-03 3.89E-03 6.30E-03 1.10E-02

Gallbladder Wall 4.93E-02 6.13E-02 9.69E-02 1.55E-01 2.64E-01

Left colon 4.47E-02 5.33E-02 8.74E-02 1.23E-01 1.56E-01

Small Intestine 1.95E-02 2.32E-02 3.53E-02 4.97E-02 6.78E-02

Stomach Wall 5.08E-03 6.85E-03 1.02E-02 1.41E-02 2.29E-02

Right colon 3.38E-02 3.83E-02 5.90E-02 8.27E-02 1.02E-01

Rectum 1.61E-02 2.01E-02 3.19E-02 4.44E-02 6.00E-02

Heart Wall 9.05E-03 1.20E-02 1.83E-02 2.79E-02 4.69E-02

Kidneys 1.56E-02 1.89E-02 2.57E-02 3.89E-02 5.84E-02

Liver 7.70E-03 9.87E-03 1.43E-02 1.95E-02 3.02E-02

Lungs 5.62E-03 7.21E-03 1.14E-02 1.75E-02 3.17E-02

Pancreas 8.96E-03 1.05E-02 1.42E-02 2.02E-02 3.08E-02

Prostate 6.28E-03 8.46E-03 1.90E-02 1.60E-02 2.48E-02

Salivary Glands 2.30E-03 2.93E-03 4.69E-03 7.57E-03 1.34E-02

Red Marrow 3.24E-03 3.83E-03 5.28E-03 7.07E-03 1.22E-02

Osteogenic Cells 5.42E-03 5.89E-03 8.05E-03 1.07E-02 1.81E-02

Spleen 4.75E-03 5.86E-03 8.36E-03 1.21E-02 2.00E-02

Testes 2.50E-03 3.14E-03 5.46E-03 7.38E-03 1.24E-02

Thymus 3.48E-03 4.62E-03 6.40E-03 1.01E-02 1.72E-02

Thyroid 2.74E-03 3.53E-03 5.56E-03 8.84E-03 1.52E-02

Urinary Bladder Wall 2.01E-02 2.51E-02 3.67E-02 4.66E-02 6.07E-02

Total Body 3.46E-03 4.19E-03 6.51E-03 1.00E-02 1.68E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.11E-03 8.64E-03 1.24E-02 1.73E-02 2.77E-02

Brain 2.34E-03 2.40E-03 3.88E-03 6.26E-03 1.08E-02

Breasts 2.49E-03 2.67E-03 ----- ----- -----

Esophagus 4.46E-03 5.21E-03 7.92E-03 1.17E-02 2.03E-02

Eyes 2.34E-03 2.40E-03 3.88E-03 6.27E-03 1.09E-02

Gallbladder Wall 5.76E-02 6.30E-02 9.52E-02 1.51E-01 2.58E-01

Left colon 4.93E-02 5.18E-02 8.44E-02 1.18E-01 1.49E-01

Small Intestine 2.29E-02 2.29E-02 3.48E-02 4.91E-02 6.77E-02

Stomach Wall 6.33E-03 6.67E-03 9.88E-03 1.38E-02 2.20E-02

Right colon 4.06E-02 3.73E-02 5.80E-02 8.09E-02 1.01E-01

Rectum 2.13E-02 2.21E-02 3.39E-02 4.58E-02 6.13E-02

Heart Wall 1.09E-02 1.19E-02 2.11E-02 2.67E-02 3.24E-02

Kidneys 1.84E-02 2.00E-02 2.66E-02 4.02E-02 6.06E-02

Liver 8.55E-03 8.68E-03 1.27E-02 1.74E-02 2.76E-02

Lungs 6.85E-03 7.74E-03 1.10E-02 1.69E-02 3.06E-02

Ovaries 7.95E-03 8.61E-03 1.19E-02 1.81E-02 2.84E-02

Pancreas 8.87E-03 9.17E-03 1.30E-02 1.89E-02 2.83E-02

Salivary Glands 2.47E-03 2.96E-03 4.69E-03 7.53E-03 1.33E-02

Red Marrow 4.22E-03 3.79E-03 4.17E-03 4.98E-03 7.30E-03

Osteogenic Cells 6.60E-03 5.96E-03 6.11E-03 6.48E-03 7.63E-03

Spleen 6.62E-03 6.67E-03 9.19E-03 1.34E-02 2.18E-02

Thymus 4.30E-03 4.46E-03 6.33E-03 9.48E-03 1.60E-02

Thyroid 2.95E-03 3.54E-03 5.46E-03 8.55E-03 1.47E-02

Urinary Bladder Wall 2.32E-02 2.36E-02 3.37E-02 4.39E-02 5.78E-02

Uterus 1.10E-02 1.24E-02 2.04E-02 2.66E-02 3.66E-02

Total Body 5.00E-03 4.32E-03 6.51E-03 9.98E-03 1.69E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.11E-03 9.45E-03 1.33E-02 1.87E-02 2.97E-02

Brain 2.11E-03 2.38E-03 3.88E-03 6.27E-03 1.08E-02

Breasts 2.47E-03 2.67E-03 ----- ----- -----

Esophagus 4.25E-03 5.26E-03 8.02E-03 1.19E-02 2.05E-02

Eyes 2.11E-03 2.38E-03 3.88E-03 6.28E-03 1.09E-02

Gallbladder Wall 5.30E-02 6.22E-02 9.61E-02 1.53E-01 2.61E-01

Left colon 4.37E-02 5.25E-02 8.59E-02 1.20E-01 1.52E-01

Small Intestine 2.08E-02 2.31E-02 3.51E-02 4.94E-02 6.78E-02

Stomach Wall 5.59E-03 6.76E-03 1.00E-02 1.39E-02 2.25E-02

Right colon 3.29E-02 3.78E-02 5.85E-02 8.18E-02 1.02E-01

Rectum 1.69E-02 2.11E-02 3.29E-02 4.51E-02 6.06E-02

Heart Wall 9.94E-03 1.19E-02 1.97E-02 2.73E-02 3.96E-02

Kidneys 1.69E-02 1.94E-02 2.61E-02 3.95E-02 5.95E-02

Liver 8.02E-03 9.28E-03 1.35E-02 1.84E-02 2.89E-02

Lungs 6.22E-03 7.47E-03 1.12E-02 1.72E-02 3.12E-02

Ovaries 7.48E-03 8.61E-03 1.19E-02 1.81E-02 2.84E-02

Pancreas 8.74E-03 9.84E-03 1.36E-02 1.95E-02 2.95E-02

Prostate 6.28E-03 8.46E-03 1.90E-02 1.60E-02 2.48E-02

Salivary Glands 2.38E-03 2.95E-03 4.69E-03 7.55E-03 1.33E-02

Red Marrow 3.66E-03 3.81E-03 4.72E-03 6.02E-03 9.76E-03

Osteogenic Cells 5.92E-03 5.92E-03 7.08E-03 8.60E-03 1.29E-02

Spleen 5.54E-03 6.27E-03 8.77E-03 1.27E-02 2.09E-02

Testes 2.50E-03 3.14E-03 5.46E-03 7.38E-03 1.24E-02

Thymus 3.88E-03 4.54E-03 6.36E-03 9.78E-03 1.66E-02

Thyroid 2.84E-03 3.53E-03 5.51E-03 8.69E-03 1.49E-02

Urinary Bladder Wall 2.14E-02 2.43E-02 3.52E-02 4.52E-02 5.93E-02

Uterus 1.02E-02 1.24E-02 2.04E-02 2.66E-02 3.66E-02

Total Body 4.12E-03 4.26E-03 6.51E-03 1.00E-02 1.69E-02

Effective Dose 9.53E-03 1.12E-02 1.68E-02 2.37E-02 3.40E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc HMPAO

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.11E-02 1.38E-02 1.88E-02 2.60E-02 3.87E-02

Brain 6.75E-03 1.07E-02 1.60E-02 2.08E-02 3.56E-02

Esophagus 4.83E-03 6.18E-03 9.26E-03 1.35E-02 2.13E-02

Eyes 2.20E-03 3.10E-03 4.98E-03 6.80E-03 1.20E-02

Gallbladder Wall 2.13E-02 2.65E-02 4.09E-02 6.40E-02 1.05E-01

Left colon 2.65E-02 3.10E-02 4.85E-02 7.00E-02 1.01E-01

Small Intestine 1.48E-02 1.76E-02 2.56E-02 3.72E-02 6.13E-02

Stomach Wall 8.54E-03 1.08E-02 1.55E-02 2.28E-02 4.29E-02

Right colon 2.03E-02 2.34E-02 3.52E-02 5.08E-02 7.07E-02

Rectum 1.08E-02 1.33E-02 1.99E-02 2.76E-02 4.12E-02

Heart Wall 4.70E-03 5.78E-03 8.33E-03 1.17E-02 1.85E-02

Kidneys 3.57E-02 4.31E-02 5.77E-02 8.83E-02 1.32E-01

Liver 1.01E-02 1.31E-02 1.87E-02 2.54E-02 3.94E-02

Lungs 1.03E-02 1.33E-02 2.17E-02 3.40E-02 6.28E-02

Pancreas 7.51E-03 8.79E-03 1.20E-02 1.70E-02 2.53E-02

Prostate 5.62E-03 7.27E-03 1.53E-02 1.13E-02 1.77E-02

Salivary Glands 2.55E-03 3.56E-03 6.28E-03 9.24E-03 1.57E-02

Red Marrow 3.25E-03 3.80E-03 5.11E-03 5.83E-03 8.61E-03

Osteogenic Cells 5.52E-03 5.81E-03 7.05E-03 9.01E-03 1.30E-02

Spleen 5.32E-03 6.48E-03 9.13E-03 1.29E-02 1.98E-02

Testes 2.10E-03 2.49E-03 4.16E-03 4.96E-03 7.86E-03

Thymus 3.45E-03 4.59E-03 6.25E-03 1.00E-02 1.68E-02

Thyroid 2.74E-02 4.34E-02 6.43E-02 1.41E-01 2.51E-01

Urinary Bladder Wall 2.40E-02 2.84E-02 3.45E-02 3.42E-02 5.62E-02

Total Body 3.11E-03 3.71E-03 5.72E-03 8.64E-03 1.43E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.03E-02 1.12E-02 1.56E-02 2.11E-02 3.21E-02

Brain 7.49E-03 1.12E-02 1.78E-02 2.24E-02 3.54E-02

Breasts 2.35E-03 2.42E-03 ----- ----- -----

Esophagus 5.39E-03 6.06E-03 8.91E-03 1.27E-02 2.01E-02

Eyes 2.75E-03 3.46E-03 6.10E-03 8.44E-03 1.27E-02

Gallbladder Wall 2.58E-02 2.79E-02 4.13E-02 6.36E-02 1.05E-01

Left colon 2.95E-02 2.96E-02 4.64E-02 6.69E-02 9.63E-02

Small Intestine 1.71E-02 1.76E-02 2.54E-02 3.69E-02 6.17E-02

Stomach Wall 9.25E-03 1.07E-02 1.51E-02 2.24E-02 4.22E-02

Right colon 2.49E-02 2.31E-02 3.51E-02 5.09E-02 7.31E-02

Rectum 1.48E-02 1.58E-02 2.17E-02 2.83E-02 4.24E-02

Heart Wall 5.21E-03 5.44E-03 7.48E-03 1.07E-02 1.73E-02

Kidneys 4.00E-02 4.46E-02 5.78E-02 8.86E-02 1.33E-01

Liver 1.22E-02 1.27E-02 1.82E-02 2.47E-02 3.86E-02

Lungs 1.26E-02 1.49E-02 2.12E-02 3.33E-02 6.14E-02

Ovaries 6.36E-03 6.96E-03 8.74E-03 1.24E-02 1.94E-02

Pancreas 8.30E-03 8.72E-03 1.22E-02 1.74E-02 2.44E-02

Salivary Glands 2.77E-03 3.67E-03 6.39E-03 9.23E-03 1.43E-02

Red Marrow 3.99E-03 3.44E-03 3.58E-03 4.17E-03 5.22E-03

Osteogenic Cells 6.54E-03 5.68E-03 5.78E-03 5.34E-03 6.45E-03

Spleen 7.33E-03 7.55E-03 1.03E-02 1.46E-02 2.25E-02

Thymus 4.87E-03 5.03E-03 7.08E-03 1.05E-02 1.68E-02

Thyroid 3.15E-02 4.34E-02 6.42E-02 1.39E-01 2.52E-01

Urinary Bladder Wall 2.65E-02 2.59E-02 3.08E-02 3.16E-02 5.16E-02

Uterus 9.24E-03 1.05E-02 1.54E-02 1.78E-02 2.54E-02

Total Body 2.67E-04 1.84E-04 2.88E-04 4.01E-04 5.21E-04

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.48E-02 1.25E-02 1.73E-02 2.35E-02 3.54E-02

Brain 2.06E-02 1.09E-02 1.69E-02 2.16E-02 3.55E-02

Breasts 4.21E-03 2.42E-03 ----- ----- -----

Esophagus 7.43E-03 6.12E-03 9.08E-03 1.31E-02 2.07E-02

Eyes 5.26E-03 3.28E-03 5.54E-03 7.62E-03 1.23E-02

Gallbladder Wall 3.40E-02 2.72E-02 4.11E-02 6.38E-02 1.06E-01

Left colon 2.48E-02 3.03E-02 4.75E-02 6.85E-02 9.85E-02

Small Intestine 1.49E-02 1.77E-02 2.55E-02 3.71E-02 6.15E-02

Stomach Wall 8.81E-03 1.07E-02 1.53E-02 2.26E-02 4.26E-02

Right colon 2.02E-02 2.33E-02 3.52E-02 5.08E-02 7.20E-02

Rectum 1.27E-02 1.46E-02 2.08E-02 2.79E-02 4.18E-02

Heart Wall 7.08E-03 5.60E-03 7.90E-03 1.12E-02 1.79E-02

Kidneys 5.65E-02 4.38E-02 5.78E-02 8.85E-02 1.32E-01

Liver 1.66E-02 1.29E-02 1.84E-02 2.50E-02 3.91E-02

Lungs 1.75E-02 1.41E-02 2.15E-02 3.37E-02 6.21E-02

Ovaries 8.49E-03 6.96E-03 8.74E-03 1.24E-02 1.94E-02

Pancreas 1.01E-02 8.75E-03 1.21E-02 1.72E-02 2.49E-02

Prostate 5.62E-03 7.27E-03 1.53E-02 1.13E-02 1.77E-02

Salivary Glands 5.13E-03 3.61E-03 6.34E-03 9.24E-03 1.50E-02

Red Marrow 5.05E-03 3.62E-03 4.34E-03 5.00E-03 6.92E-03

Osteogenic Cells 9.34E-03 5.74E-03 6.42E-03 7.18E-03 9.73E-03

Spleen 8.56E-03 7.01E-03 9.71E-03 1.38E-02 2.11E-02

Testes 2.10E-03 2.49E-03 4.16E-03 4.96E-03 7.86E-03

Thymus 6.31E-03 4.81E-03 6.66E-03 1.03E-02 1.68E-02

Thyroid 4.53E-02 4.34E-02 6.42E-02 1.40E-01 2.51E-01

Urinary Bladder Wall 3.10E-02 2.71E-02 3.26E-02 3.29E-02 5.39E-02

Uterus 1.19E-02 1.05E-02 1.54E-02 1.78E-02 2.54E-02

Total Body 5.58E-03 3.77E-03 5.69E-03 8.57E-03 1.42E-02

Effective Dose 1.31E-02 1.23E-02 1.75E-02 2.67E-02 4.44E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc HIDA - Normal

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.18E-02 1.42E-02 1.90E-02 2.61E-02 4.10E-02

Brain 8.29E-05 1.12E-04 2.01E-04 3.46E-04 6.56E-04

Esophagus 3.11E-03 4.24E-03 6.10E-03 8.13E-03 1.26E-02

Eyes 8.76E-05 1.24E-04 2.22E-04 3.97E-04 7.67E-04

Gallbladder Wall 1.26E-01 1.56E-01 2.46E-01 3.96E-01 6.86E-01

Left colon 1.22E-01 1.41E-01 2.32E-01 3.25E-01 4.19E-01

Small Intestine 5.00E-02 5.90E-02 8.99E-02 1.25E-01 1.65E-01

Stomach Wall 5.93E-03 8.28E-03 1.15E-02 1.59E-02 2.47E-02

Right colon 9.04E-02 1.04E-01 1.61E-01 2.23E-01 2.70E-01

Rectum 3.73E-02 4.65E-02 7.38E-02 1.03E-01 1.32E-01

Heart Wall 3.74E-03 4.76E-03 6.75E-03 9.46E-03 1.55E-02

Kidneys 8.74E-03 1.05E-02 1.49E-02 2.10E-02 3.07E-02

Liver 1.75E-02 2.25E-02 3.27E-02 4.42E-02 6.75E-02

Lungs 2.32E-03 2.86E-03 4.14E-03 5.81E-03 9.11E-03

Pancreas 1.72E-02 1.93E-02 2.45E-02 3.35E-02 4.81E-02

Prostate 7.66E-03 1.03E-02 2.74E-02 1.98E-02 2.84E-02

Salivary Glands 1.32E-04 2.00E-04 3.49E-04 6.06E-04 1.16E-03

Red Marrow 2.40E-03 2.68E-03 2.56E-03 2.36E-03 2.41E-03

Osteogenic Cells 3.80E-03 3.41E-03 3.41E-03 3.18E-03 3.22E-03

Spleen 4.80E-03 5.65E-03 7.06E-03 9.86E-03 1.55E-02

Testes 8.80E-04 1.26E-03 2.88E-03 3.21E-03 4.86E-03

Thymus 1.17E-03 1.75E-03 2.40E-03 4.14E-03 7.19E-03

Thyroid 4.39E-04 6.75E-04 1.10E-03 1.82E-03 3.12E-03

Urinary Bladder Wall 2.14E-02 2.67E-02 3.96E-02 5.16E-02 6.56E-02

Total Body 3.09E-03 3.65E-03 5.72E-03 8.68E-03 1.38E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.07E-02 1.14E-02 1.65E-02 2.20E-02 3.40E-02

Brain 9.79E-05 1.03E-04 1.78E-04 3.09E-04 5.72E-04

Breasts 9.02E-04 9.06E-04 ----- ----- -----

Esophagus 3.03E-03 3.32E-03 5.07E-03 6.27E-03 1.26E-02

Eyes 9.84E-05 1.07E-04 1.80E-04 3.28E-04 6.54E-04

Gallbladder Wall 1.46E-01 1.59E-01 2.39E-01 3.82E-01 6.65E-01

Left colon 1.33E-01 1.35E-01 2.22E-01 3.11E-01 3.95E-01

Small Intestine 5.90E-02 5.80E-02 8.83E-02 1.23E-01 1.64E-01

Stomach Wall 8.20E-03 8.24E-03 1.14E-02 1.60E-02 2.42E-02

Right colon 1.12E-01 1.01E-01 1.58E-01 2.18E-01 2.68E-01

Rectum 4.85E-02 4.82E-02 7.56E-02 1.03E-01 1.33E-01

Heart Wall 2.30E-03 2.28E-03 3.29E-03 4.98E-03 8.28E-03

Kidneys 1.25E-02 1.24E-02 1.76E-02 2.51E-02 3.76E-02

Liver 1.92E-02 1.96E-02 2.85E-02 3.89E-02 6.10E-02

Lungs 2.11E-03 2.12E-03 2.96E-03 4.30E-03 6.38E-03

Ovaries 1.17E-02 1.21E-02 1.66E-02 2.54E-02 3.84E-02

Pancreas 1.52E-02 1.55E-02 2.14E-02 3.05E-02 4.24E-02

Salivary Glands 1.42E-04 1.64E-04 2.96E-04 5.02E-04 9.78E-04

Red Marrow 3.91E-03 2.70E-03 2.57E-03 2.43E-03 2.20E-03

Osteogenic Cells 5.35E-03 3.61E-03 3.18E-03 2.84E-03 2.66E-03

Spleen 7.81E-03 7.25E-03 8.75E-03 1.26E-02 1.92E-02

Thymus 1.08E-03 1.17E-03 1.71E-03 2.61E-03 4.60E-03

Thyroid 4.34E-04 4.82E-04 7.70E-04 1.24E-03 2.07E-03

Urinary Bladder Wall 2.64E-02 2.67E-02 3.80E-02 5.07E-02 6.54E-02

Uterus 1.79E-02 1.93E-02 3.38E-02 4.36E-02 5.85E-02

Total Body 5.88E-03 3.87E-03 5.76E-03 8.57E-03 1.40E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.09E-02 1.06E-02 1.78E-02 2.40E-02 3.75E-02

Brain 8.97E-05 1.03E-04 1.90E-04 3.27E-04 6.14E-04

Breasts 8.33E-04 5.00E-04 ----- ----- -----

Esophagus 2.99E-03 3.19E-03 5.58E-03 7.20E-03 1.26E-02

Eyes 9.26E-05 1.09E-04 2.01E-04 3.62E-04 7.11E-04

Gallbladder Wall 1.35E-01 1.50E-01 2.43E-01 3.89E-01 6.75E-01

Left colon 1.18E-01 7.18E-02 2.27E-01 3.18E-01 4.07E-01

Small Intestine 5.34E-02 3.12E-02 8.91E-02 1.24E-01 1.64E-01

Stomach Wall 6.72E-03 5.03E-03 1.14E-02 1.59E-02 2.45E-02

Right colon 8.72E-02 5.41E-02 1.59E-01 2.20E-01 2.69E-01

Rectum 3.74E-02 2.56E-02 7.47E-02 1.03E-01 1.32E-01

Heart Wall 2.94E-03 2.99E-03 5.02E-03 7.22E-03 1.19E-02

Kidneys 1.01E-02 8.15E-03 1.62E-02 2.31E-02 3.42E-02

Liver 1.80E-02 1.92E-02 3.06E-02 4.15E-02 6.43E-02

Lungs 2.16E-03 2.12E-03 3.55E-03 5.06E-03 7.74E-03

Ovaries 1.02E-02 2.62E-03 1.66E-02 2.54E-02 3.84E-02

Pancreas 1.57E-02 1.25E-02 2.29E-02 3.20E-02 4.52E-02

Prostate 7.66E-03 1.03E-02 2.74E-02 1.98E-02 2.84E-02

Salivary Glands 1.35E-04 1.69E-04 3.22E-04 5.54E-04 1.07E-03

Red Marrow 2.95E-03 1.79E-03 2.56E-03 2.39E-03 2.30E-03

Osteogenic Cells 4.30E-03 2.30E-03 3.30E-03 3.01E-03 2.94E-03

Spleen 5.87E-03 3.45E-03 7.91E-03 1.12E-02 1.73E-02

Testes 8.80E-04 1.26E-03 2.88E-03 3.21E-03 4.86E-03

Thymus 1.10E-03 1.28E-03 2.05E-03 3.37E-03 5.89E-03

Thyroid 4.25E-04 5.05E-04 9.35E-04 1.53E-03 2.59E-03

Urinary Bladder Wall 2.33E-02 2.31E-02 3.88E-02 5.12E-02 6.55E-02

Uterus 1.57E-02 5.05E-03 3.38E-02 4.36E-02 5.85E-02

Total Body 4.14E-03 2.40E-03 5.74E-03 8.63E-03 1.39E-02

Effective Dose 1.74E-02 1.24E-02 3.14E-02 4.38E-02 5.88E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc HIDA – Parenchymal Liver Disease

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.40E-03 7.87E-03 1.07E-02 1.43E-02 2.22E-02

Brain 2.22E-04 2.81E-04 4.70E-04 7.69E-04 1.36E-03

Esophagus 1.89E-03 2.52E-03 3.68E-03 5.01E-03 7.84E-03

Eyes 2.24E-04 2.86E-04 4.78E-04 7.89E-04 1.40E-03

Gallbladder Wall 3.97E-02 4.90E-02 7.65E-02 1.22E-01 2.09E-01

Left colon 4.36E-02 5.19E-02 8.52E-02 1.19E-01 1.51E-01

Small Intestine 1.89E-02 2.24E-02 3.43E-02 4.72E-02 6.15E-02

Stomach Wall 2.84E-03 3.92E-03 5.57E-03 7.72E-03 1.19E-02

Right colon 3.33E-02 3.75E-02 5.80E-02 7.99E-02 9.66E-02

Rectum 1.80E-02 2.28E-02 3.62E-02 4.78E-02 5.86E-02

Heart Wall 2.16E-03 2.76E-03 3.97E-03 5.57E-03 9.02E-03

Kidneys 7.74E-03 9.42E-03 1.31E-02 1.91E-02 2.80E-02

Liver 1.17E-02 1.52E-02 2.20E-02 2.98E-02 4.61E-02

Lungs 1.48E-03 1.85E-03 2.70E-03 3.79E-03 5.98E-03

Pancreas 7.03E-03 8.07E-03 1.05E-02 1.46E-02 2.13E-02

Prostate 9.90E-03 1.29E-02 4.07E-02 2.06E-02 2.47E-02

Salivary Glands 2.85E-04 3.77E-04 6.18E-04 1.02E-03 1.83E-03

Red Marrow 1.99E-03 2.32E-03 2.41E-03 2.23E-03 2.54E-03

Osteogenic Cells 2.91E-03 2.70E-03 2.88E-03 2.78E-03 3.29E-03

Spleen 2.36E-03 2.88E-03 3.85E-03 5.43E-03 8.44E-03

Testes 2.03E-03 2.60E-03 6.98E-03 5.05E-03 6.22E-03

Thymus 8.57E-04 1.21E-03 1.68E-03 2.80E-03 4.83E-03

Thyroid 4.66E-04 6.44E-04 1.04E-03 1.65E-03 2.83E-03

Urinary Bladder Wall 7.15E-02 8.69E-02 1.28E-01 1.52E-01 1.85E-01

Total Body 2.16E-03 2.61E-03 4.08E-03 5.83E-03 8.50E-03

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.99E-03 6.48E-03 9.32E-03 1.24E-02 1.94E-02

Brain 2.73E-04 2.82E-04 4.62E-04 7.55E-04 1.32E-03

Breasts 6.80E-04 7.08E-04 ----- ----- -----

Esophagus 2.09E-03 2.29E-03 3.51E-03 4.68E-03 8.89E-03

Eyes 2.75E-04 2.86E-04 4.67E-04 7.70E-04 1.36E-03

Gallbladder Wall 4.51E-02 4.90E-02 7.35E-02 1.16E-01 2.00E-01

Left colon 4.81E-02 5.06E-02 8.30E-02 1.16E-01 1.45E-01

Small Intestine 2.23E-02 2.22E-02 3.37E-02 4.64E-02 6.08E-02

Stomach Wall 3.72E-03 3.85E-03 5.44E-03 7.66E-03 1.17E-02

Right colon 3.99E-02 3.63E-02 5.67E-02 7.81E-02 9.55E-02

Rectum 2.88E-02 3.23E-02 4.57E-02 5.62E-02 6.66E-02

Heart Wall 1.55E-03 1.60E-03 2.33E-03 3.46E-03 5.83E-03

Kidneys 9.46E-03 1.01E-02 1.37E-02 2.02E-02 2.99E-02

Liver 1.37E-02 1.43E-02 2.07E-02 2.82E-02 4.43E-02

Lungs 1.55E-03 1.60E-03 2.23E-03 3.22E-03 4.90E-03

Ovaries 9.20E-03 1.15E-02 1.39E-02 2.05E-02 2.76E-02

Pancreas 6.94E-03 7.25E-03 1.01E-02 1.45E-02 2.01E-02

Salivary Glands 3.12E-04 3.74E-04 6.11E-04 9.93E-04 1.77E-03

Red Marrow 2.61E-03 2.07E-03 2.04E-03 1.92E-03 1.87E-03

Osteogenic Cells 3.49E-03 2.57E-03 2.36E-03 2.09E-03 1.97E-03

Spleen 3.61E-03 3.54E-03 4.53E-03 6.52E-03 1.00E-02

Thymus 9.22E-04 9.99E-04 1.43E-03 2.18E-03 3.81E-03

Thyroid 4.88E-04 5.59E-04 8.82E-04 1.40E-03 2.40E-03

Urinary Bladder Wall 7.75E-02 7.76E-02 1.12E-01 1.37E-01 1.66E-01

Uterus 1.81E-02 2.28E-02 3.74E-02 4.19E-02 4.69E-02

Total Body 3.61E-03 2.68E-03 4.00E-03 5.62E-03 8.46E-03

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.09E-03 7.17E-03 9.99E-03 1.34E-02 2.08E-02

Brain 2.47E-04 2.82E-04 4.66E-04 7.62E-04 1.34E-03

Breasts 6.57E-04 7.08E-04 ----- ----- -----

Esophagus 1.96E-03 2.41E-03 3.59E-03 4.85E-03 8.37E-03

Eyes 2.49E-04 2.86E-04 4.72E-04 7.79E-04 1.38E-03

Gallbladder Wall 4.20E-02 4.90E-02 7.50E-02 1.19E-01 2.04E-01

Left colon 4.24E-02 5.12E-02 8.41E-02 1.18E-01 1.48E-01

Small Intestine 2.02E-02 2.23E-02 3.40E-02 4.68E-02 6.11E-02

Stomach Wall 3.16E-03 3.89E-03 5.51E-03 7.69E-03 1.18E-02

Right colon 3.21E-02 3.69E-02 5.74E-02 7.90E-02 9.60E-02

Rectum 2.11E-02 2.75E-02 4.09E-02 5.20E-02 6.26E-02

Heart Wall 1.83E-03 2.18E-03 3.15E-03 4.51E-03 7.42E-03

Kidneys 8.42E-03 9.77E-03 1.34E-02 1.96E-02 2.89E-02

Liver 1.26E-02 1.47E-02 2.14E-02 2.90E-02 4.52E-02

Lungs 1.50E-03 1.72E-03 2.46E-03 3.51E-03 5.44E-03

Ovaries 8.66E-03 1.15E-02 1.39E-02 2.05E-02 2.76E-02

Pancreas 6.80E-03 7.66E-03 1.03E-02 1.45E-02 2.07E-02

Prostate 9.90E-03 1.29E-02 4.07E-02 2.06E-02 2.47E-02

Salivary Glands 2.98E-04 3.75E-04 6.15E-04 1.00E-03 1.80E-03

Red Marrow 2.23E-03 2.19E-03 2.23E-03 2.07E-03 2.21E-03

Osteogenic Cells 3.10E-03 2.64E-03 2.62E-03 2.43E-03 2.63E-03

Spleen 2.83E-03 3.21E-03 4.19E-03 5.97E-03 9.23E-03

Testes 2.03E-03 2.60E-03 6.98E-03 5.05E-03 6.22E-03

Thymus 8.81E-04 1.10E-03 1.56E-03 2.49E-03 4.32E-03

Thyroid 4.73E-04 6.02E-04 9.59E-04 1.53E-03 2.62E-03

Urinary Bladder Wall 7.42E-02 8.22E-02 1.20E-01 1.44E-01 1.75E-01

Uterus 1.72E-02 2.28E-02 3.74E-02 4.19E-02 4.69E-02

Total Body 2.77E-03 2.64E-03 4.04E-03 5.73E-03 8.48E-03

Effective Dose 1.01E-02 1.18E-02 1.77E-02 2.34E-02 3.05E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Macro-aggregated Albumin (MAA)

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.84E-03 8.93E-03 1.24E-02 1.66E-02 2.76E-02

Brain 9.87E-04 1.29E-03 2.16E-03 3.49E-03 6.00E-03

Esophagus 1.33E-02 1.70E-02 2.54E-02 3.61E-02 5.85E-02

Eyes 9.50E-04 1.23E-03 2.06E-03 3.35E-03 5.72E-03

Gallbladder Wall 8.06E-03 9.98E-03 1.38E-02 1.94E-02 2.86E-02

Left colon 3.33E-03 4.51E-03 6.77E-03 9.62E-03 1.62E-02

Small Intestine 2.53E-03 3.24E-03 5.13E-03 7.63E-03 1.25E-02

Stomach Wall 9.11E-03 1.13E-02 1.62E-02 2.22E-02 3.33E-02

Right colon 3.46E-03 4.28E-03 6.26E-03 9.12E-03 1.43E-02

Rectum 1.98E-03 2.56E-03 4.12E-03 6.03E-03 1.04E-02

Heart Wall 1.29E-02 1.58E-02 2.30E-02 3.13E-02 4.99E-02

Kidneys 4.30E-03 5.41E-03 7.83E-03 1.13E-02 1.73E-02

Liver 1.81E-02 2.34E-02 3.34E-02 4.53E-02 7.05E-02

Lungs 5.88E-02 7.58E-02 1.28E-01 2.03E-01 3.83E-01

Pancreas 6.33E-03 7.78E-03 1.14E-02 1.63E-02 2.76E-02

Prostate 2.30E-03 3.12E-03 7.16E-03 6.30E-03 1.10E-02

Salivary Glands 1.66E-03 2.19E-03 3.57E-03 5.50E-03 9.75E-03

Red Marrow 4.83E-03 5.28E-03 5.49E-03 6.03E-03 8.13E-03

Osteogenic Cells 6.03E-03 5.73E-03 6.44E-03 7.46E-03 1.01E-02

Spleen 4.39E-03 5.61E-03 8.16E-03 1.14E-02 1.80E-02

Testes 1.06E-03 1.32E-03 2.40E-03 3.13E-03 5.49E-03

Thymus 1.05E-02 1.46E-02 1.87E-02 3.00E-02 4.72E-02

Thyroid 8.44E-03 1.08E-02 1.54E-02 2.29E-02 3.23E-02

Urinary Bladder Wall 1.07E-02 1.32E-02 1.93E-02 2.83E-02 5.11E-02

Total Body 2.97E-03 3.63E-03 5.84E-03 9.05E-03 1.55E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.40E-03 9.49E-03 1.32E-02 1.72E-02 2.68E-02

Brain 1.28E-03 1.31E-03 2.23E-03 3.63E-03 6.16E-03

Breasts 5.03E-03 5.38E-03 ----- ----- -----

Esophagus 1.58E-02 1.77E-02 2.55E-02 3.66E-02 5.52E-02

Eyes 1.27E-03 1.31E-03 2.22E-03 3.56E-03 6.07E-03

Gallbladder Wall 6.13E-03 6.64E-03 9.76E-03 1.33E-02 1.99E-02

Left colon 2.96E-03 3.23E-03 4.87E-03 7.15E-03 1.23E-02

Small Intestine 2.90E-03 3.16E-03 4.73E-03 7.16E-03 1.16E-02

Stomach Wall 7.89E-03 8.44E-03 1.19E-02 1.66E-02 2.56E-02

Right colon 2.94E-03 3.20E-03 4.79E-03 7.29E-03 1.13E-02

Rectum 3.10E-03 3.83E-03 5.32E-03 7.37E-03 1.21E-02

Heart Wall 1.61E-02 1.78E-02 2.36E-02 3.27E-02 5.34E-02

Kidneys 5.09E-03 5.57E-03 7.74E-03 1.13E-02 1.67E-02

Liver 2.19E-02 2.32E-02 3.31E-02 4.48E-02 6.99E-02

Lungs 7.17E-02 8.82E-02 1.26E-01 2.01E-01 3.78E-01

Ovaries 2.34E-03 2.75E-03 3.78E-03 6.15E-03 1.08E-02

Pancreas 7.07E-03 7.86E-03 1.12E-02 1.61E-02 2.26E-02

Salivary Glands 2.01E-03 2.33E-03 3.82E-03 5.95E-03 9.87E-03

Red Marrow 5.55E-03 4.30E-03 4.27E-03 4.24E-03 5.46E-03

Osteogenic Cells 7.36E-03 5.45E-03 5.40E-03 6.38E-03 5.72E-03

Spleen 4.98E-03 5.63E-03 8.03E-03 1.13E-02 1.83E-02

Thymus 1.72E-02 1.75E-02 2.36E-02 3.31E-02 4.96E-02

Thyroid 8.75E-03 1.06E-02 1.46E-02 1.99E-02 2.92E-02

Urinary Bladder Wall 1.16E-02 1.18E-02 1.70E-02 2.55E-02 4.58E-02

Uterus 3.24E-03 4.00E-03 6.32E-03 8.79E-03 1.39E-02

Total Body 5.19E-03 3.99E-03 5.92E-03 9.00E-03 1.55E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.62E-03 9.21E-03 1.28E-02 1.69E-02 2.72E-02

Brain 1.13E-03 1.30E-03 2.19E-03 3.56E-03 6.08E-03

Breasts 5.03E-03 5.38E-03 ----- ----- -----

Esophagus 1.46E-02 1.73E-02 2.55E-02 3.64E-02 5.69E-02

Eyes 1.11E-03 1.27E-03 2.14E-03 3.46E-03 5.89E-03

Gallbladder Wall 7.10E-03 8.31E-03 1.18E-02 1.64E-02 2.42E-02

Left colon 3.14E-03 3.87E-03 5.82E-03 8.39E-03 1.42E-02

Small Intestine 2.71E-03 3.20E-03 4.93E-03 7.40E-03 1.21E-02

Stomach Wall 8.50E-03 9.85E-03 1.41E-02 1.94E-02 2.95E-02

Right colon 3.20E-03 3.74E-03 5.52E-03 8.20E-03 1.28E-02

Rectum 2.54E-03 3.20E-03 4.72E-03 6.70E-03 1.12E-02

Heart Wall 1.45E-02 1.68E-02 2.33E-02 3.20E-02 5.16E-02

Kidneys 4.70E-03 5.49E-03 7.79E-03 1.13E-02 1.70E-02

Liver 2.00E-02 2.33E-02 3.32E-02 4.50E-02 7.02E-02

Lungs 6.52E-02 8.20E-02 1.27E-01 2.02E-01 3.80E-01

Ovaries 2.34E-03 2.75E-03 3.78E-03 6.15E-03 1.08E-02

Pancreas 6.70E-03 7.82E-03 1.13E-02 1.62E-02 2.51E-02

Prostate 2.30E-03 3.12E-03 7.16E-03 6.30E-03 1.10E-02

Salivary Glands 1.83E-03 2.26E-03 3.70E-03 5.72E-03 9.81E-03

Red Marrow 5.19E-03 4.79E-03 4.88E-03 5.14E-03 6.80E-03

Osteogenic Cells 6.69E-03 5.59E-03 5.92E-03 6.92E-03 7.90E-03

Spleen 4.69E-03 5.62E-03 8.10E-03 1.14E-02 1.81E-02

Testes 1.06E-03 1.32E-03 2.40E-03 3.13E-03 5.49E-03

Thymus 1.39E-02 1.60E-02 2.11E-02 3.15E-02 4.84E-02

Thyroid 8.60E-03 1.07E-02 1.50E-02 2.14E-02 3.07E-02

Urinary Bladder Wall 1.12E-02 1.25E-02 1.82E-02 2.69E-02 4.84E-02

Uterus 3.24E-03 4.00E-03 6.32E-03 8.79E-03 1.39E-02

Total Body 4.08E-03 3.81E-03 5.88E-03 9.02E-03 1.55E-02

Effective Dose 1.37E-02 1.65E-02 2.42E-02 3.67E-02 6.56E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Mercaptoacetyl Triglycine (MAG3) -

Normal Renal Function

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 9.56E-04 1.26E-03 1.76E-03 2.19E-03 3.81E-03

Brain 7.45E-05 9.34E-05 1.54E-04 2.48E-04 4.36E-04

Esophagus 1.51E-04 2.03E-04 3.28E-04 4.59E-04 8.71E-04

Eyes 7.44E-05 9.29E-05 1.52E-04 2.48E-04 4.40E-04

Gallbladder Wall 3.98E-04 5.58E-04 8.51E-04 1.17E-03 2.28E-03

Left colon 1.05E-03 1.27E-03 1.33E-03 1.47E-03 3.08E-03

Small Intestine 2.61E-03 3.22E-03 4.52E-03 4.70E-03 9.92E-03

Stomach Wall 2.37E-04 3.24E-04 5.31E-04 6.91E-04 1.45E-03

Right colon 1.16E-03 1.47E-03 1.84E-03 1.71E-03 3.59E-03

Rectum 9.30E-03 1.20E-02 1.64E-02 1.61E-02 3.53E-02

Heart Wall 1.51E-04 2.08E-04 3.36E-04 4.70E-04 9.86E-04

Kidneys 3.72E-03 4.57E-03 6.19E-03 9.11E-03 1.44E-02

Liver 3.19E-04 4.44E-04 6.57E-04 8.47E-04 1.73E-03

Lungs 1.27E-04 1.72E-04 2.74E-04 3.96E-04 8.15E-04

Pancreas 3.79E-04 5.00E-04 7.81E-04 1.03E-03 2.02E-03

Prostate 1.30E-02 1.66E-02 4.85E-02 1.79E-02 3.96E-02

Salivary Glands 8.98E-05 1.15E-04 1.84E-04 2.98E-04 5.37E-04

Red Marrow 1.52E-03 1.85E-03 1.62E-03 1.11E-03 1.61E-03

Osteogenic Cells 1.93E-03 1.76E-03 1.54E-03 1.09E-03 1.51E-03

Spleen 4.06E-04 5.58E-04 8.58E-04 1.12E-03 2.14E-03

Testes 2.90E-03 3.65E-03 8.99E-03 4.77E-03 1.05E-02

Thymus 1.03E-04 1.48E-04 2.29E-04 3.51E-04 6.99E-04

Thyroid 9.93E-05 1.32E-04 2.14E-04 3.35E-04 6.33E-04

Urinary Bladder Wall 1.18E-01 1.43E-01 1.79E-01 1.82E-01 4.69E-01

Total Body 1.45E-03 1.78E-03 2.39E-03 2.65E-03 5.94E-03

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.99E-04 9.51E-04 1.28E-03 1.77E-03 2.92E-03

Brain 9.21E-05 9.49E-05 1.54E-04 2.47E-04 4.29E-04

Breasts 9.23E-05 1.04E-04 ----- ----- -----

Esophagus 1.86E-04 2.33E-04 3.84E-04 4.93E-04 8.84E-04

Eyes 9.37E-05 9.82E-05 1.59E-04 2.54E-04 4.40E-04

Gallbladder Wall 9.90E-04 1.16E-03 1.56E-03 1.84E-03 2.89E-03

Left colon 1.97E-03 2.67E-03 3.61E-03 4.34E-03 7.26E-03

Small Intestine 3.26E-03 3.61E-03 4.50E-03 4.65E-03 6.33E-03

Stomach Wall 3.40E-04 4.09E-04 6.10E-04 8.13E-04 1.35E-03

Right colon 1.08E-03 1.21E-03 1.85E-03 1.87E-03 2.94E-03

Rectum 2.05E-02 2.87E-02 3.05E-02 2.75E-02 4.04E-02

Heart Wall 1.72E-04 1.91E-04 2.92E-04 4.28E-04 7.53E-04

Kidneys 4.04E-03 4.62E-03 6.00E-03 8.97E-03 1.35E-02

Liver 3.95E-04 4.47E-04 6.46E-04 8.62E-04 1.47E-03

Lungs 1.57E-04 1.71E-04 2.53E-04 3.80E-04 6.59E-04

Ovaries 8.96E-03 1.29E-02 1.21E-02 1.50E-02 2.66E-02

Pancreas 5.54E-04 6.77E-04 9.81E-04 1.33E-03 1.99E-03

Salivary Glands 1.06E-04 1.33E-04 2.08E-04 3.23E-04 5.68E-04

Red Marrow 1.59E-03 1.46E-03 1.25E-03 9.26E-04 9.62E-04

Osteogenic Cells 1.86E-03 1.44E-03 1.16E-03 8.09E-04 8.21E-04

Spleen 5.58E-04 6.33E-04 9.15E-04 1.22E-03 2.04E-03

Thymus 1.23E-04 1.39E-04 1.99E-04 3.30E-04 6.16E-04

Thyroid 1.01E-04 1.21E-04 1.91E-04 3.07E-04 5.46E-04

Urinary Bladder Wall 1.26E-01 1.26E-01 1.55E-01 1.61E-01 2.89E-01

Uterus 2.13E-02 2.93E-02 4.00E-02 3.58E-02 5.19E-02

Total Body 1.96E-03 1.73E-03 2.23E-03 2.43E-03 4.06E-03

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.77E-04 1.11E-03 1.52E-03 1.98E-03 3.15E-03

Brain 8.33E-05 9.42E-05 1.54E-04 2.47E-04 4.30E-04

Breasts 9.23E-05 1.04E-04 ----- ----- -----

Esophagus 1.69E-04 2.18E-04 3.56E-04 4.76E-04 8.39E-04

Eyes 8.40E-05 9.55E-05 1.56E-04 2.51E-04 4.38E-04

Gallbladder Wall 6.94E-04 8.58E-04 1.21E-03 1.50E-03 2.35E-03

Left colon 1.51E-03 1.97E-03 2.47E-03 2.91E-03 4.83E-03

Small Intestine 2.94E-03 3.41E-03 4.51E-03 4.67E-03 6.73E-03

Stomach Wall 2.88E-04 3.67E-04 5.71E-04 7.52E-04 1.28E-03

Right colon 1.12E-03 1.34E-03 1.84E-03 1.79E-03 2.85E-03

Rectum 1.49E-02 2.04E-02 2.34E-02 2.18E-02 3.26E-02

Heart Wall 1.62E-04 1.99E-04 3.14E-04 4.49E-04 8.06E-04

Kidneys 3.88E-03 4.60E-03 6.10E-03 9.04E-03 1.36E-02

Liver 3.57E-04 4.46E-04 6.52E-04 8.55E-04 1.46E-03

Lungs 1.42E-04 1.72E-04 2.64E-04 3.88E-04 6.92E-04

Ovaries 8.96E-03 1.29E-02 1.21E-02 1.50E-02 2.66E-02

Pancreas 4.66E-04 5.88E-04 8.81E-04 1.18E-03 1.82E-03

Prostate 1.30E-02 1.66E-02 4.85E-02 1.79E-02 2.77E-02

Salivary Glands 9.78E-05 1.24E-04 1.96E-04 3.10E-04 5.49E-04

Red Marrow 1.55E-03 1.65E-03 1.44E-03 1.02E-03 1.11E-03

Osteogenic Cells 1.90E-03 1.60E-03 1.36E-03 9.68E-04 1.09E-03

Spleen 4.82E-04 5.95E-04 8.87E-04 1.17E-03 1.94E-03

Testes 2.90E-03 3.65E-03 8.99E-03 4.77E-03 7.44E-03

Thymus 1.13E-04 1.44E-04 2.14E-04 3.40E-04 6.27E-04

Thyroid 1.00E-04 1.27E-04 2.02E-04 3.21E-04 5.73E-04

Urinary Bladder Wall 1.22E-01 1.35E-01 1.67E-01 1.72E-01 3.08E-01

Uterus 2.13E-02 2.93E-02 4.00E-02 3.58E-02 5.19E-02

Total Body 1.70E-03 1.75E-03 2.31E-03 2.54E-03 4.18E-03

Effective Dose 6.35E-03 7.22E-03 8.97E-03 9.07E-03 1.58E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Mercaptoacetyl Triglycine (MAG3) -

Abnormal Renal Function

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.41E-03 4.35E-03 6.05E-03 8.21E-03 1.23E-02

Brain 4.91E-04 6.13E-04 1.01E-03 1.62E-03 2.80E-03

Esophagus 7.64E-04 9.98E-04 1.56E-03 2.33E-03 4.04E-03

Eyes 4.91E-04 6.12E-04 1.01E-03 1.63E-03 2.83E-03

Gallbladder Wall 1.34E-03 1.79E-03 2.68E-03 3.79E-03 5.16E-03

Left colon 1.78E-03 2.18E-03 2.75E-03 3.55E-03 5.95E-03

Small Intestine 2.79E-03 3.45E-03 4.94E-03 5.68E-03 8.94E-03

Stomach Wall 9.56E-04 1.26E-03 1.99E-03 2.73E-03 4.60E-03

Right colon 1.76E-03 2.26E-03 3.15E-03 3.94E-03 6.27E-03

Rectum 7.57E-03 9.77E-03 1.35E-02 1.31E-02 2.06E-02

Heart Wall 7.91E-04 1.01E-03 1.54E-03 2.24E-03 3.87E-03

Kidneys 1.47E-02 1.78E-02 2.38E-02 3.64E-02 5.46E-02

Liver 1.49E-03 1.96E-03 2.80E-03 3.75E-03 6.04E-03

Lungs 6.86E-04 8.90E-04 1.33E-03 2.00E-03 3.49E-03

Pancreas 1.24E-03 1.57E-03 2.34E-03 3.36E-03 5.43E-03

Prostate 1.03E-02 1.33E-02 3.72E-02 1.43E-02 2.26E-02

Salivary Glands 5.89E-04 7.48E-04 1.20E-03 1.93E-03 3.41E-03

Red Marrow 1.71E-03 2.07E-03 2.36E-03 2.27E-03 3.59E-03

Osteogenic Cells 2.48E-03 2.48E-03 2.91E-03 3.10E-03 4.93E-03

Spleen 1.55E-03 1.98E-03 2.94E-03 4.10E-03 6.66E-03

Testes 2.61E-03 3.27E-03 7.50E-03 4.67E-03 7.57E-03

Thymus 6.23E-04 8.20E-04 1.21E-03 1.89E-03 3.36E-03

Thyroid 6.10E-04 7.81E-04 1.25E-03 1.99E-03 3.53E-03

Urinary Bladder Wall 8.82E-02 1.07E-01 1.34E-01 1.27E-01 2.28E-01

Total Body 1.68E-03 2.06E-03 2.92E-03 3.64E-03 6.10E-03

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.36E-03 3.34E-03 4.65E-03 6.39E-03 1.01E-02

Brain 5.95E-04 6.23E-04 1.01E-03 1.62E-03 2.80E-03

Breasts 5.10E-04 5.91E-04 ----- ----- -----

Esophagus 6.81E-04 1.04E-03 1.63E-03 2.41E-03 4.16E-03

Eyes 5.96E-04 6.26E-04 1.01E-03 1.63E-03 2.81E-03

Gallbladder Wall 1.45E-03 2.79E-03 3.97E-03 5.27E-03 7.31E-03

Left colon 1.95E-03 3.12E-03 4.31E-03 5.39E-03 9.22E-03

Small Intestine 2.68E-03 3.81E-03 5.01E-03 5.75E-03 8.60E-03

Stomach Wall 9.32E-04 1.40E-03 2.13E-03 2.93E-03 4.81E-03

Right colon 1.42E-03 2.05E-03 3.12E-03 4.05E-03 6.46E-03

Rectum 1.29E-02 2.21E-02 2.38E-02 2.08E-02 3.13E-02

Heart Wall 8.21E-04 9.80E-04 1.46E-03 2.16E-03 3.72E-03

Kidneys 4.27E-03 1.83E-02 2.36E-02 3.62E-02 5.43E-02

Liver 9.59E-04 1.97E-03 2.83E-03 3.80E-03 6.09E-03

Lungs 7.58E-04 8.94E-04 1.31E-03 1.97E-03 3.38E-03

Ovaries 6.08E-03 1.05E-02 1.03E-02 1.24E-02 2.19E-02

Pancreas 1.16E-03 1.98E-03 2.85E-03 4.06E-03 6.20E-03

Salivary Glands 6.21E-04 7.70E-04 1.21E-03 1.94E-03 3.42E-03

Red Marrow 1.54E-03 1.78E-03 1.73E-03 1.65E-03 2.26E-03

Osteogenic Cells 2.11E-03 2.23E-03 2.08E-03 1.88E-03 2.15E-03

Spleen 1.11E-03 2.26E-03 3.24E-03 4.57E-03 7.44E-03

Thymus 7.16E-04 8.17E-04 1.18E-03 1.85E-03 3.31E-03

Thyroid 6.19E-04 7.77E-04 1.23E-03 1.97E-03 3.45E-03

Urinary Bladder Wall 7.53E-02 9.42E-02 1.16E-01 1.13E-01 2.02E-01

Uterus 1.34E-02 2.26E-02 3.09E-02 2.67E-02 3.92E-02

Total Body 1.78E-03 2.04E-03 2.80E-03 3.47E-03 5.92E-03

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.39E-03 3.85E-03 5.35E-03 7.30E-03 1.12E-02

Brain 5.43E-04 6.18E-04 1.01E-03 1.62E-03 2.80E-03

Breasts 5.10E-04 5.91E-04 ----- ----- -----

Esophagus 7.23E-04 1.02E-03 1.59E-03 2.37E-03 4.10E-03

Eyes 5.43E-04 6.19E-04 1.01E-03 1.63E-03 2.82E-03

Gallbladder Wall 1.40E-03 2.29E-03 3.32E-03 4.53E-03 6.24E-03

Left colon 1.87E-03 2.65E-03 3.53E-03 4.47E-03 7.59E-03

Small Intestine 2.74E-03 3.63E-03 4.98E-03 5.71E-03 8.77E-03

Stomach Wall 9.44E-04 1.33E-03 2.06E-03 2.83E-03 4.70E-03

Right colon 1.59E-03 2.16E-03 3.14E-03 4.00E-03 6.37E-03

Rectum 1.02E-02 1.59E-02 1.86E-02 1.69E-02 2.59E-02

Heart Wall 8.06E-04 9.97E-04 1.50E-03 2.20E-03 3.79E-03

Kidneys 9.48E-03 1.80E-02 2.37E-02 3.63E-02 5.44E-02

Liver 1.22E-03 1.96E-03 2.82E-03 3.77E-03 6.07E-03

Lungs 7.22E-04 8.92E-04 1.32E-03 1.98E-03 3.44E-03

Ovaries 6.08E-03 1.05E-02 1.03E-02 1.24E-02 2.19E-02

Pancreas 1.20E-03 1.78E-03 2.60E-03 3.71E-03 5.81E-03

Prostate 1.03E-02 1.33E-02 3.72E-02 1.43E-02 2.26E-02

Salivary Glands 6.05E-04 7.59E-04 1.21E-03 1.94E-03 3.41E-03

Red Marrow 1.62E-03 1.93E-03 2.04E-03 1.96E-03 2.92E-03

Osteogenic Cells 2.30E-03 2.36E-03 2.49E-03 2.49E-03 3.54E-03

Spleen 1.33E-03 2.12E-03 3.09E-03 4.34E-03 7.05E-03

Testes 2.61E-03 3.27E-03 7.50E-03 4.67E-03 7.57E-03

Thymus 6.69E-04 8.19E-04 1.20E-03 1.87E-03 3.33E-03

Thyroid 6.15E-04 7.79E-04 1.24E-03 1.98E-03 3.49E-03

Urinary Bladder Wall 8.18E-02 1.01E-01 1.25E-01 1.20E-01 2.15E-01

Uterus 1.34E-02 2.26E-02 3.09E-02 2.67E-02 3.92E-02

Total Body 1.73E-03 2.05E-03 2.86E-03 3.55E-03 6.01E-03

Effective Dose 4.88E-03 6.31E-03 7.98E-03 8.22E-03 1.42E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc MIBI - Rest

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.30E-02 1.62E-02 2.13E-02 3.10E-02 4.77E-02

Brain 2.29E-03 2.83E-03 4.60E-03 7.31E-03 1.25E-02

Esophagus 4.31E-03 5.65E-03 8.33E-03 1.27E-02 2.14E-02

Eyes 2.19E-03 2.75E-03 4.46E-03 7.19E-03 1.24E-02

Gallbladder Wall 4.56E-02 5.67E-02 8.53E-02 1.41E-01 2.38E-01

Left colon 3.90E-02 4.66E-02 7.42E-02 1.07E-01 1.37E-01

Small Intestine 1.76E-02 2.11E-02 3.05E-02 4.52E-02 6.28E-02

Stomach Wall 5.38E-03 7.22E-03 1.05E-02 1.51E-02 2.44E-02

Right colon 3.02E-02 3.49E-02 1.42E-02 7.57E-02 9.36E-02

Rectum 1.39E-02 1.75E-02 2.73E-02 3.85E-02 5.40E-02

Heart Wall 6.49E-03 8.50E-03 1.25E-02 1.90E-02 3.16E-02

Kidneys 3.74E-02 4.51E-02 5.96E-02 9.27E-02 1.39E-01

Liver 1.30E-02 1.69E-02 2.32E-02 3.30E-02 5.15E-02

Lungs 3.70E-03 4.71E-03 6.80E-03 1.03E-02 1.74E-02

Pancreas 9.28E-03 1.10E-02 1.43E-02 2.15E-02 3.32E-02

Prostate 5.49E-03 7.47E-03 1.38E-02 1.42E-02 2.43E-02

Salivary Glands 1.64E-02 2.03E-02 3.04E-02 3.98E-02 5.69E-02

Red Marrow 3.46E-03 4.10E-03 5.84E-03 7.73E-03 1.36E-02

Osteogenic Cells 6.04E-03 6.57E-03 8.99E-03 1.20E-02 2.02E-02

Spleen 6.07E-03 7.52E-03 1.06E-02 1.55E-02 2.54E-02

Testes 2.49E-03 3.12E-03 4.88E-03 7.38E-03 1.30E-02

Thymus 3.25E-03 4.30E-03 6.05E-03 9.75E-03 1.71E-02

Thyroid 5.79E-03 8.69E-03 1.30E-02 2.65E-02 4.71E-02

Urinary Bladder Wall 1.11E-02 1.42E-02 1.88E-02 2.20E-02 3.92E-02

Total Body 3.71E-03 4.51E-03 6.63E-03 1.08E-02 1.84E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.23E-02 1.32E-02 1.84E-02 2.58E-02 4.07E-02

Brain 2.80E-03 2.88E-03 4.61E-03 7.31E-03 1.24E-02

Breasts 2.64E-03 2.82E-03 ----- ----- -----

Esophagus 4.78E-03 5.51E-03 8.33E-03 1.25E-02 2.21E-02

Eyes 2.76E-03 2.85E-03 4.54E-03 7.27E-03 1.24E-02

Gallbladder Wall 5.35E-02 5.85E-02 8.47E-02 1.38E-01 2.34E-01

Left colon 4.32E-02 4.49E-02 7.20E-02 1.02E-01 1.30E-01

Small Intestine 2.09E-02 2.10E-02 3.06E-02 4.50E-02 6.34E-02

Stomach Wall 6.90E-03 7.29E-03 1.06E-02 1.51E-02 2.43E-02

Right colon 3.62E-02 3.39E-02 1.22E-02 7.39E-02 9.26E-02

Rectum 1.82E-02 1.81E-02 2.77E-02 3.82E-02 5.42E-02

Heart Wall 7.28E-03 7.75E-03 1.32E-02 1.73E-02 2.27E-02

Kidneys 4.23E-02 4.70E-02 6.03E-02 9.37E-02 1.41E-01

Liver 1.54E-02 1.60E-02 2.23E-02 3.14E-02 4.97E-02

Lungs 4.49E-03 4.56E-03 6.48E-03 9.79E-03 1.64E-02

Ovaries 7.35E-03 7.75E-03 1.04E-02 1.65E-02 2.73E-02

Pancreas 1.05E-02 1.10E-02 1.50E-02 2.26E-02 3.36E-02

Salivary Glands 1.94E-02 2.11E-02 3.04E-02 3.96E-02 5.66E-02

Red Marrow 4.48E-03 4.06E-03 4.36E-03 5.42E-03 8.08E-03

Osteogenic Cells 7.28E-03 6.59E-03 6.67E-03 7.22E-03 8.58E-03

Spleen 8.47E-03 8.67E-03 1.19E-02 1.75E-02 2.82E-02

Thymus 3.89E-03 4.12E-03 5.92E-03 9.17E-03 1.60E-02

Thyroid 6.47E-03 8.64E-03 1.29E-02 2.62E-02 4.70E-02

Urinary Bladder Wall 1.35E-02 1.39E-02 1.81E-02 2.18E-02 3.84E-02

Uterus 9.18E-03 9.94E-03 1.53E-02 2.13E-02 3.27E-02

Total Body 5.34E-03 4.65E-03 6.65E-03 1.07E-02 1.85E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.25E-02 1.47E-02 1.98E-02 2.71E-02 4.42E-02

Brain 2.54E-03 2.86E-03 4.61E-03 7.27E-03 1.24E-02

Breasts 2.63E-03 2.82E-03 ----- ----- -----

Esophagus 4.52E-03 5.58E-03 8.33E-03 1.23E-02 2.18E-02

Eyes 2.47E-03 2.80E-03 4.50E-03 7.19E-03 1.24E-02

Gallbladder Wall 4.92E-02 5.76E-02 8.50E-02 1.36E-01 2.36E-01

Left colon 3.82E-02 4.57E-02 7.31E-02 5.96E-02 1.33E-01

Small Intestine 1.90E-02 2.11E-02 3.05E-02 2.92E-02 6.31E-02

Stomach Wall 6.04E-03 7.25E-03 1.06E-02 1.34E-02 2.44E-02

Right colon 2.95E-02 3.44E-02 1.32E-02 4.54E-02 9.31E-02

Rectum 1.43E-02 1.78E-02 2.75E-02 2.50E-02 5.41E-02

Heart Wall 6.86E-03 8.13E-03 1.28E-02 1.78E-02 2.71E-02

Kidneys 3.97E-02 4.61E-02 5.99E-02 9.13E-02 1.40E-01

Liver 1.41E-02 1.64E-02 2.28E-02 3.10E-02 5.06E-02

Lungs 4.08E-03 4.64E-03 6.64E-03 9.78E-03 1.69E-02

Ovaries 6.92E-03 7.75E-03 1.04E-02 1.13E-02 2.73E-02

Pancreas 9.74E-03 1.10E-02 1.46E-02 1.95E-02 3.34E-02

Prostate 5.49E-03 7.47E-03 1.38E-02 1.42E-02 2.43E-02

Salivary Glands 1.79E-02 2.07E-02 3.04E-02 3.97E-02 5.67E-02

Red Marrow 3.91E-03 4.08E-03 5.10E-03 6.35E-03 1.08E-02

Osteogenic Cells 6.58E-03 6.58E-03 7.83E-03 9.35E-03 1.44E-02

Spleen 7.14E-03 8.10E-03 1.12E-02 1.51E-02 2.68E-02

Testes 2.49E-03 3.12E-03 4.88E-03 7.38E-03 1.30E-02

Thymus 3.57E-03 4.21E-03 5.99E-03 9.30E-03 1.66E-02

Thyroid 6.12E-03 8.66E-03 1.30E-02 2.62E-02 4.70E-02

Urinary Bladder Wall 1.21E-02 1.40E-02 1.85E-02 2.26E-02 3.88E-02

Uterus 8.48E-03 9.94E-03 1.53E-02 1.30E-02 3.27E-02

Total Body 4.43E-03 4.58E-03 6.64E-03 9.92E-03 1.84E-02

Effective Dose 9.21E-03 1.08E-02 1.37E-02 1.79E-02 3.36E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc MIBI - Stress

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.07E-02 1.33E-02 1.86E-02 2.60E-02 4.08E-02

Brain 2.64E-03 3.28E-03 5.35E-03 8.54E-03 1.47E-02

Esophagus 4.40E-03 5.72E-03 8.78E-03 1.33E-02 2.27E-02

Eyes 2.57E-03 3.22E-03 5.26E-03 8.48E-03 1.47E-02

Gallbladder Wall 3.71E-02 4.63E-02 7.27E-02 1.15E-01 1.93E-01

Left colon 3.12E-02 3.77E-02 6.14E-02 8.64E-02 1.11E-01

Small Intestine 1.48E-02 1.78E-02 2.71E-02 3.86E-02 5.46E-02

Stomach Wall 5.29E-03 7.10E-03 1.08E-02 1.50E-02 2.47E-02

Right colon 2.45E-02 2.83E-02 4.35E-02 6.15E-02 7.77E-02

Rectum 1.21E-02 1.52E-02 2.39E-02 3.39E-02 4.90E-02

Heart Wall 7.34E-03 9.65E-03 1.46E-02 2.20E-02 3.67E-02

Kidneys 2.75E-02 3.33E-02 4.48E-02 6.84E-02 1.03E-01

Liver 1.06E-02 1.37E-02 1.98E-02 2.70E-02 4.25E-02

Lungs 3.89E-03 4.97E-03 7.34E-03 1.10E-02 1.88E-02

Pancreas 8.37E-03 1.00E-02 1.39E-02 2.01E-02 3.16E-02

Prostate 5.49E-03 7.50E-03 1.35E-02 1.48E-02 2.57E-02

Salivary Glands 1.23E-02 1.53E-02 2.30E-02 3.05E-02 4.44E-02

Red Marrow 3.64E-03 4.35E-03 6.43E-03 8.84E-03 1.59E-02

Osteogenic Cells 6.36E-03 7.10E-03 1.01E-02 1.37E-02 2.37E-02

Spleen 5.66E-03 7.04E-03 1.03E-02 1.49E-02 2.48E-02

Testes 2.88E-03 3.59E-03 5.60E-03 8.60E-03 1.51E-02

Thymus 3.66E-03 4.80E-03 6.87E-03 1.08E-02 1.89E-02

Thyroid 4.91E-03 7.16E-03 1.08E-02 2.11E-02 3.74E-02

Urinary Bladder Wall 1.04E-02 1.35E-02 1.80E-02 2.62E-02 4.70E-02

Total Body 3.87E-03 4.71E-03 7.28E-03 1.14E-02 1.95E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.05E-02 1.13E-02 1.61E-02 2.23E-02 3.59E-02

Brain 3.24E-03 3.33E-03 5.35E-03 8.54E-03 1.46E-02

Breasts 2.97E-03 3.18E-03 ----- ----- -----

Esophagus 4.85E-03 5.66E-03 8.73E-03 1.31E-02 2.31E-02

Eyes 3.21E-03 3.31E-03 5.31E-03 8.51E-03 1.46E-02

Gallbladder Wall 4.36E-02 4.77E-02 7.18E-02 1.13E-01 1.89E-01

Left colon 3.48E-02 3.65E-02 5.91E-02 8.31E-02 1.06E-01

Small Intestine 1.75E-02 1.78E-02 2.69E-02 3.84E-02 5.50E-02

Stomach Wall 6.70E-03 7.12E-03 1.07E-02 1.50E-02 2.45E-02

Right colon 2.93E-02 2.75E-02 4.26E-02 6.02E-02 7.70E-02

Rectum 1.54E-02 1.58E-02 2.44E-02 3.41E-02 4.96E-02

Heart Wall 8.65E-03 9.25E-03 1.61E-02 2.07E-02 2.65E-02

Kidneys 3.13E-02 3.47E-02 4.53E-02 6.92E-02 1.04E-01

Liver 1.26E-02 1.30E-02 1.89E-02 2.57E-02 4.09E-02

Lungs 4.83E-03 4.89E-03 7.06E-03 1.06E-02 1.81E-02

Ovaries 7.23E-03 7.65E-03 1.09E-02 1.67E-02 2.82E-02

Pancreas 9.50E-03 9.92E-03 1.41E-02 2.07E-02 3.15E-02

Salivary Glands 1.44E-02 1.58E-02 2.30E-02 3.04E-02 4.42E-02

Red Marrow 4.61E-03 4.33E-03 4.88E-03 6.06E-03 9.30E-03

Osteogenic Cells 7.60E-03 7.15E-03 7.47E-03 8.04E-03 9.73E-03

Spleen 7.71E-03 7.91E-03 1.12E-02 1.63E-02 2.69E-02

Thymus 4.43E-03 4.63E-03 6.71E-03 1.03E-02 1.80E-02

Thyroid 5.40E-03 7.12E-03 1.08E-02 2.09E-02 3.74E-02

Urinary Bladder Wall 1.27E-02 1.32E-02 1.74E-02 2.55E-02 4.53E-02

Uterus 8.64E-03 9.41E-03 1.49E-02 2.11E-02 3.30E-02

Total Body 5.32E-03 4.83E-03 7.29E-03 1.13E-02 1.96E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.05E-02 1.23E-02 1.73E-02 2.42E-02 3.84E-02

Brain 2.94E-03 3.30E-03 5.35E-03 8.54E-03 1.46E-02

Breasts 2.96E-03 3.18E-03 ----- ----- -----

Esophagus 4.61E-03 5.69E-03 8.76E-03 1.32E-02 2.29E-02

Eyes 2.89E-03 3.27E-03 5.29E-03 8.50E-03 1.47E-02

Gallbladder Wall 4.00E-02 4.70E-02 7.23E-02 1.14E-01 1.91E-01

Left colon 3.07E-02 3.71E-02 6.03E-02 8.47E-02 1.08E-01

Small Intestine 1.60E-02 1.78E-02 2.70E-02 3.85E-02 5.48E-02

Stomach Wall 5.92E-03 7.11E-03 1.08E-02 1.50E-02 2.46E-02

Right colon 2.41E-02 2.79E-02 4.30E-02 6.09E-02 7.73E-02

Rectum 1.26E-02 1.55E-02 2.42E-02 3.40E-02 4.93E-02

Heart Wall 7.97E-03 9.45E-03 1.53E-02 2.13E-02 3.16E-02

Kidneys 2.93E-02 3.40E-02 4.51E-02 6.88E-02 1.04E-01

Liver 1.15E-02 1.34E-02 1.94E-02 2.63E-02 4.17E-02

Lungs 4.35E-03 4.93E-03 7.20E-03 1.08E-02 1.84E-02

Ovaries 6.92E-03 7.65E-03 1.09E-02 1.67E-02 2.82E-02

Pancreas 8.82E-03 9.97E-03 1.40E-02 2.04E-02 3.16E-02

Prostate 5.49E-03 7.50E-03 1.35E-02 1.48E-02 2.57E-02

Salivary Glands 1.34E-02 1.55E-02 2.30E-02 3.05E-02 4.43E-02

Red Marrow 4.08E-03 4.34E-03 5.66E-03 7.45E-03 1.26E-02

Osteogenic Cells 6.92E-03 7.12E-03 8.78E-03 1.09E-02 1.67E-02

Spleen 6.59E-03 7.48E-03 1.07E-02 1.56E-02 2.58E-02

Testes 2.88E-03 3.59E-03 5.60E-03 8.60E-03 1.51E-02

Thymus 4.04E-03 4.71E-03 6.79E-03 1.06E-02 1.85E-02

Thyroid 5.15E-03 7.14E-03 1.08E-02 2.10E-02 3.74E-02

Urinary Bladder Wall 1.14E-02 1.33E-02 1.77E-02 2.58E-02 4.62E-02

Uterus 8.15E-03 9.41E-03 1.49E-02 2.11E-02 3.30E-02

Total Body 4.52E-03 4.77E-03 7.28E-03 1.13E-02 1.95E-02

Effective Dose 8.13E-03 9.53E-03 1.40E-02 2.02E-02 3.05E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Monoclonal Antibodies - Intact

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.07E-02 1.33E-02 1.86E-02 2.60E-02 4.08E-02

Brain 2.64E-03 3.28E-03 5.35E-03 8.54E-03 1.47E-02

Esophagus 4.40E-03 5.72E-03 8.78E-03 1.33E-02 2.27E-02

Eyes 2.57E-03 3.22E-03 5.26E-03 8.48E-03 1.47E-02

Gallbladder Wall 3.71E-02 4.63E-02 7.27E-02 1.15E-01 1.93E-01

Left colon 3.12E-02 3.77E-02 6.14E-02 8.64E-02 1.11E-01

Small Intestine 1.48E-02 1.78E-02 2.71E-02 3.86E-02 5.46E-02

Stomach Wall 5.29E-03 7.10E-03 1.08E-02 1.50E-02 2.47E-02

Right colon 2.45E-02 2.83E-02 4.35E-02 6.15E-02 7.77E-02

Rectum 1.21E-02 1.52E-02 2.39E-02 3.39E-02 4.90E-02

Heart Wall 7.34E-03 9.65E-03 1.46E-02 2.20E-02 3.67E-02

Kidneys 2.75E-02 3.33E-02 4.48E-02 6.84E-02 1.03E-01

Liver 1.06E-02 1.37E-02 1.98E-02 2.70E-02 4.25E-02

Lungs 3.89E-03 4.97E-03 7.34E-03 1.10E-02 1.88E-02

Pancreas 8.37E-03 1.00E-02 1.39E-02 2.01E-02 3.16E-02

Prostate 5.49E-03 7.50E-03 1.35E-02 1.48E-02 2.57E-02

Salivary Glands 1.23E-02 1.53E-02 2.30E-02 3.05E-02 4.44E-02

Red Marrow 3.64E-03 4.35E-03 6.43E-03 8.84E-03 1.59E-02

Osteogenic Cells 6.36E-03 7.10E-03 1.01E-02 1.37E-02 2.37E-02

Spleen 5.66E-03 7.04E-03 1.03E-02 1.49E-02 2.48E-02

Testes 2.88E-03 3.59E-03 5.60E-03 8.60E-03 1.51E-02

Thymus 3.66E-03 4.80E-03 6.87E-03 1.08E-02 1.89E-02

Thyroid 4.91E-03 7.16E-03 1.08E-02 2.11E-02 3.74E-02

Urinary Bladder Wall 1.04E-02 1.35E-02 1.80E-02 2.62E-02 4.70E-02

Total Body 3.87E-03 4.71E-03 7.28E-03 1.14E-02 1.95E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.05E-02 1.13E-02 1.61E-02 2.23E-02 3.59E-02

Brain 3.24E-03 3.33E-03 5.35E-03 8.54E-03 1.46E-02

Breasts 2.97E-03 3.18E-03 ----- ----- -----

Esophagus 4.85E-03 5.66E-03 8.73E-03 1.31E-02 2.31E-02

Eyes 3.21E-03 3.31E-03 5.31E-03 8.51E-03 1.46E-02

Gallbladder Wall 4.36E-02 4.77E-02 7.18E-02 1.13E-01 1.89E-01

Left colon 3.48E-02 3.65E-02 5.91E-02 8.31E-02 1.06E-01

Small Intestine 1.75E-02 1.78E-02 2.69E-02 3.84E-02 5.50E-02

Stomach Wall 6.70E-03 7.12E-03 1.07E-02 1.50E-02 2.45E-02

Right colon 2.93E-02 2.75E-02 4.26E-02 6.02E-02 7.70E-02

Rectum 1.54E-02 1.58E-02 2.44E-02 3.41E-02 4.96E-02

Heart Wall 8.65E-03 9.25E-03 1.61E-02 2.07E-02 2.65E-02

Kidneys 3.13E-02 3.47E-02 4.53E-02 6.92E-02 1.04E-01

Liver 1.26E-02 1.30E-02 1.89E-02 2.57E-02 4.09E-02

Lungs 4.83E-03 4.89E-03 7.06E-03 1.06E-02 1.81E-02

Ovaries 7.23E-03 7.65E-03 1.09E-02 1.67E-02 2.82E-02

Pancreas 9.50E-03 9.92E-03 1.41E-02 2.07E-02 3.15E-02

Salivary Glands 1.44E-02 1.58E-02 2.30E-02 3.04E-02 4.42E-02

Red Marrow 4.61E-03 4.33E-03 4.88E-03 6.06E-03 9.30E-03

Osteogenic Cells 7.60E-03 7.15E-03 7.47E-03 8.04E-03 9.73E-03

Spleen 7.71E-03 7.91E-03 1.12E-02 1.63E-02 2.69E-02

Thymus 4.43E-03 4.63E-03 6.71E-03 1.03E-02 1.80E-02

Thyroid 5.40E-03 7.12E-03 1.08E-02 2.09E-02 3.74E-02

Urinary Bladder Wall 1.27E-02 1.32E-02 1.74E-02 2.55E-02 4.53E-02

Uterus 8.64E-03 9.41E-03 1.49E-02 2.11E-02 3.30E-02

Total Body 5.32E-03 4.83E-03 7.29E-03 1.13E-02 1.96E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.05E-02 1.23E-02 1.73E-02 2.42E-02 3.84E-02

Brain 2.94E-03 3.30E-03 5.35E-03 8.54E-03 1.46E-02

Breasts 2.96E-03 3.18E-03 ----- ----- -----

Esophagus 4.61E-03 5.69E-03 8.76E-03 1.32E-02 2.29E-02

Eyes 2.89E-03 3.27E-03 5.29E-03 8.50E-03 1.47E-02

Gallbladder Wall 4.00E-02 4.70E-02 7.23E-02 1.14E-01 1.91E-01

Left colon 3.07E-02 3.71E-02 6.03E-02 8.47E-02 1.08E-01

Small Intestine 1.60E-02 1.78E-02 2.70E-02 3.85E-02 5.48E-02

Stomach Wall 5.92E-03 7.11E-03 1.08E-02 1.50E-02 2.46E-02

Right colon 2.41E-02 2.79E-02 4.30E-02 6.09E-02 7.73E-02

Rectum 1.26E-02 1.55E-02 2.42E-02 3.40E-02 4.93E-02

Heart Wall 7.97E-03 9.45E-03 1.53E-02 2.13E-02 3.16E-02

Kidneys 2.93E-02 3.40E-02 4.51E-02 6.88E-02 1.04E-01

Liver 1.15E-02 1.34E-02 1.94E-02 2.63E-02 4.17E-02

Lungs 4.35E-03 4.93E-03 7.20E-03 1.08E-02 1.84E-02

Ovaries 6.92E-03 7.65E-03 1.09E-02 1.67E-02 2.82E-02

Pancreas 8.82E-03 9.97E-03 1.40E-02 2.04E-02 3.16E-02

Prostate 5.49E-03 7.50E-03 1.35E-02 1.48E-02 2.57E-02

Salivary Glands 1.34E-02 1.55E-02 2.30E-02 3.05E-02 4.43E-02

Red Marrow 4.08E-03 4.34E-03 5.66E-03 7.45E-03 1.26E-02

Osteogenic Cells 6.92E-03 7.12E-03 8.78E-03 1.09E-02 1.67E-02

Spleen 6.59E-03 7.48E-03 1.07E-02 1.56E-02 2.58E-02

Testes 2.88E-03 3.59E-03 5.60E-03 8.60E-03 1.51E-02

Thymus 4.04E-03 4.71E-03 6.79E-03 1.06E-02 1.85E-02

Thyroid 5.15E-03 7.14E-03 1.08E-02 2.10E-02 3.74E-02

Urinary Bladder Wall 1.14E-02 1.33E-02 1.77E-02 2.58E-02 4.62E-02

Uterus 8.15E-03 9.41E-03 1.49E-02 2.11E-02 3.30E-02

Total Body 4.52E-03 4.77E-03 7.28E-03 1.13E-02 1.95E-02

Effective Dose 8.13E-03 9.53E-03 1.40E-02 2.02E-02 3.05E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Monoclonal Antibodies – Fab2

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.94E-02 2.42E-02 3.31E-02 4.45E-02 6.84E-02

Brain 1.10E-03 1.40E-03 2.21E-03 3.57E-03 6.33E-03

Esophagus 4.20E-03 5.52E-03 8.04E-03 1.11E-02 1.79E-02

Eyes 1.11E-03 1.40E-03 2.21E-03 3.58E-03 6.37E-03

Gallbladder Wall 1.12E-02 1.38E-02 1.84E-02 2.60E-02 3.85E-02

Left colon 5.09E-03 6.62E-03 9.17E-03 1.26E-02 2.02E-02

Small Intestine 3.83E-03 4.78E-03 7.16E-03 1.04E-02 1.61E-02

Stomach Wall 5.23E-03 6.67E-03 9.85E-03 1.38E-02 2.14E-02

Right colon 5.22E-03 6.58E-03 1.03E-02 1.46E-02 2.22E-02

Rectum 2.24E-03 2.87E-03 4.42E-03 6.32E-03 1.08E-02

Heart Wall 4.28E-03 5.41E-03 7.84E-03 1.10E-02 1.78E-02

Kidneys 6.44E-02 7.78E-02 1.04E-01 1.60E-01 2.39E-01

Liver 2.41E-02 3.13E-02 4.48E-02 6.08E-02 9.55E-02

Lungs 3.51E-03 4.39E-03 6.37E-03 8.97E-03 1.44E-02

Pancreas 6.37E-03 7.79E-03 1.12E-02 1.61E-02 2.57E-02

Prostate 2.21E-03 2.98E-03 4.44E-03 6.39E-03 1.11E-02

Salivary Glands 1.32E-03 1.67E-03 2.64E-03 4.22E-03 7.38E-03

Red Marrow 6.23E-03 6.93E-03 1.08E-02 1.69E-02 3.84E-02

Osteogenic Cells 6.16E-03 6.83E-03 9.99E-03 1.36E-02 2.72E-02

Spleen 3.96E-02 4.56E-02 6.93E-02 1.04E-01 1.70E-01

Testes 1.08E-03 1.37E-03 2.09E-03 3.35E-03 5.90E-03

Thymus 2.30E-03 3.03E-03 4.21E-03 6.75E-03 1.16E-02

Thyroid 1.68E-03 2.16E-03 3.37E-03 5.24E-03 9.02E-03

Urinary Bladder Wall 1.73E-03 2.41E-03 3.55E-03 5.13E-03 9.04E-03

Total Body 2.58E-03 3.15E-03 4.90E-03 7.57E-03 1.28E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.18E-02 2.34E-02 3.25E-02 4.38E-02 6.71E-02

Brain 1.39E-03 1.41E-03 2.21E-03 4.10E-03 7.18E-03

Breasts 1.85E-03 1.97E-03 ----- ----- -----

Esophagus 5.28E-03 5.79E-03 8.68E-03 1.25E-02 2.19E-02

Eyes 1.40E-03 1.42E-03 2.21E-03 3.57E-03 6.34E-03

Gallbladder Wall 1.22E-02 1.32E-02 1.85E-02 2.49E-02 3.76E-02

Left colon 5.45E-03 5.82E-03 7.79E-03 1.11E-02 1.84E-02

Small Intestine 5.01E-03 5.37E-03 7.71E-03 1.13E-02 1.80E-02

Stomach Wall 6.93E-03 7.38E-03 1.06E-02 1.47E-02 2.25E-02

Right colon 5.16E-03 5.70E-03 8.95E-03 1.33E-02 2.07E-02

Rectum 2.51E-03 2.65E-03 4.08E-03 5.87E-03 1.02E-02

Heart Wall 4.01E-03 4.24E-03 6.14E-03 8.93E-03 1.51E-02

Kidneys 7.18E-02 8.07E-02 1.04E-01 1.60E-01 2.38E-01

Liver 2.98E-02 3.15E-02 4.53E-02 6.11E-02 9.64E-02

Lungs 4.20E-03 4.38E-03 6.10E-03 8.70E-03 1.36E-02

Ovaries 2.92E-03 3.13E-03 4.59E-03 6.89E-03 1.13E-02

Pancreas 1.04E-02 1.13E-02 1.58E-02 2.26E-02 3.21E-02

Salivary Glands 1.44E-03 1.68E-03 2.61E-03 4.18E-03 7.30E-03

Red Marrow 7.71E-03 6.96E-03 9.40E-03 1.57E-02 3.58E-02

Osteogenic Cells 6.93E-03 6.62E-03 8.35E-03 1.14E-02 2.20E-02

Spleen 4.63E-02 4.71E-02 7.09E-02 1.07E-01 1.73E-01

Thymus 2.71E-03 2.96E-03 4.15E-03 6.29E-03 1.08E-02

Thyroid 1.81E-03 2.08E-03 3.21E-03 5.04E-03 8.62E-03

Urinary Bladder Wall 2.09E-03 2.33E-03 3.34E-03 4.85E-03 8.47E-03

Uterus 2.59E-03 2.83E-03 4.32E-03 6.55E-03 1.07E-02

Total Body 3.96E-03 3.26E-03 4.88E-03 7.47E-03 1.29E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.06E-02 2.38E-02 3.28E-02 4.41E-02 6.77E-02

Brain 1.25E-03 1.40E-03 2.21E-03 3.83E-03 6.76E-03

Breasts 1.85E-03 1.97E-03 ----- ----- -----

Esophagus 4.74E-03 5.65E-03 8.36E-03 1.18E-02 1.99E-02

Eyes 1.25E-03 1.41E-03 2.21E-03 3.57E-03 6.36E-03

Gallbladder Wall 1.17E-02 1.35E-02 1.84E-02 2.55E-02 3.80E-02

Left colon 5.27E-03 6.22E-03 8.48E-03 1.19E-02 1.93E-02

Small Intestine 4.42E-03 5.08E-03 7.44E-03 1.08E-02 1.70E-02

Stomach Wall 6.08E-03 7.03E-03 1.02E-02 1.43E-02 2.20E-02

Right colon 5.19E-03 6.14E-03 9.64E-03 1.39E-02 2.14E-02

Rectum 2.37E-03 2.76E-03 4.25E-03 6.10E-03 1.05E-02

Heart Wall 4.14E-03 4.83E-03 6.99E-03 9.97E-03 1.64E-02

Kidneys 6.81E-02 7.93E-02 1.04E-01 1.60E-01 2.39E-01

Liver 2.69E-02 3.14E-02 4.50E-02 6.09E-02 9.59E-02

Lungs 3.86E-03 4.39E-03 6.24E-03 8.84E-03 1.40E-02

Ovaries 2.92E-03 3.13E-03 4.59E-03 6.89E-03 1.13E-02

Pancreas 8.36E-03 9.54E-03 1.35E-02 1.94E-02 2.89E-02

Prostate 2.21E-03 2.98E-03 4.44E-03 6.39E-03 1.11E-02

Salivary Glands 1.38E-03 1.68E-03 2.62E-03 4.20E-03 7.34E-03

Red Marrow 6.97E-03 6.94E-03 1.01E-02 1.63E-02 3.71E-02

Osteogenic Cells 6.54E-03 6.73E-03 9.17E-03 1.25E-02 2.46E-02

Spleen 4.29E-02 4.63E-02 7.01E-02 1.06E-01 1.72E-01

Testes 1.08E-03 1.37E-03 2.09E-03 3.35E-03 5.90E-03

Thymus 2.50E-03 3.00E-03 4.18E-03 6.52E-03 1.12E-02

Thyroid 1.74E-03 2.12E-03 3.29E-03 5.14E-03 8.82E-03

Urinary Bladder Wall 1.91E-03 2.37E-03 3.45E-03 4.99E-03 8.76E-03

Uterus 2.59E-03 2.83E-03 4.32E-03 6.55E-03 1.07E-02

Total Body 3.27E-03 3.21E-03 4.89E-03 7.52E-03 1.29E-02

Effective Dose 6.09E-03 6.88E-03 9.69E-03 1.41E-02 2.37E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Monoclonal Antibodies – Fab

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.80E-02 2.28E-02 3.13E-02 4.28E-02 6.24E-02

Brain 9.62E-04 1.20E-03 1.97E-03 3.18E-03 5.52E-03

Esophagus 2.42E-03 3.22E-03 4.83E-03 6.74E-03 1.13E-02

Eyes 9.63E-04 1.21E-03 1.97E-03 3.18E-03 5.56E-03

Gallbladder Wall 5.34E-03 6.81E-03 9.43E-03 1.36E-02 1.98E-02

Left colon 4.50E-03 5.49E-03 7.14E-03 9.97E-03 1.58E-02

Small Intestine 3.24E-03 4.01E-03 6.01E-03 8.88E-03 1.39E-02

Stomach Wall 3.30E-03 4.23E-03 6.40E-03 8.96E-03 1.42E-02

Right colon 3.76E-03 4.85E-03 7.79E-03 1.13E-02 1.76E-02

Rectum 1.96E-03 2.50E-03 3.90E-03 5.74E-03 9.95E-03

Heart Wall 2.33E-03 2.97E-03 4.43E-03 6.41E-03 1.06E-02

Kidneys 8.63E-02 1.04E-01 1.39E-01 2.14E-01 3.20E-01

Liver 8.58E-03 1.12E-02 1.58E-02 2.14E-02 3.36E-02

Lungs 2.00E-03 2.55E-03 3.76E-03 5.52E-03 9.20E-03

Pancreas 4.28E-03 5.27E-03 7.65E-03 1.11E-02 1.71E-02

Prostate 2.11E-03 2.84E-03 4.19E-03 6.08E-03 1.06E-02

Salivary Glands 1.16E-03 1.48E-03 2.37E-03 3.82E-03 6.72E-03

Red Marrow 2.77E-03 3.14E-03 5.32E-03 6.54E-03 1.33E-02

Osteogenic Cells 3.90E-03 4.13E-03 6.28E-03 7.43E-03 1.31E-02

Spleen 1.49E-02 1.76E-02 2.61E-02 3.83E-02 6.11E-02

Testes 1.03E-03 1.29E-03 1.96E-03 3.18E-03 5.61E-03

Thymus 1.49E-03 2.00E-03 2.85E-03 4.59E-03 7.97E-03

Thyroid 1.30E-03 1.68E-03 2.68E-03 4.23E-03 7.45E-03

Urinary Bladder Wall 1.59E-03 2.22E-03 3.26E-03 4.75E-03 8.50E-03

Total Body 2.03E-03 2.47E-03 3.84E-03 5.95E-03 1.01E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.61E-02 1.77E-02 2.46E-02 3.33E-02 5.00E-02

Brain 1.19E-03 1.22E-03 1.97E-03 3.31E-03 5.71E-03

Breasts 1.27E-03 1.37E-03 ----- ----- -----

Esophagus 2.93E-03 3.34E-03 5.07E-03 7.34E-03 1.24E-02

Eyes 1.19E-03 1.23E-03 1.97E-03 3.18E-03 5.51E-03

Gallbladder Wall 9.63E-03 1.05E-02 1.47E-02 2.02E-02 2.91E-02

Left colon 4.40E-03 4.72E-03 6.21E-03 9.00E-03 1.52E-02

Small Intestine 4.25E-03 4.57E-03 6.59E-03 9.76E-03 1.56E-02

Stomach Wall 4.58E-03 4.89E-03 7.17E-03 9.98E-03 1.52E-02

Right colon 4.12E-03 4.59E-03 7.33E-03 1.11E-02 1.78E-02

Rectum 2.08E-03 2.24E-03 3.49E-03 5.20E-03 9.29E-03

Heart Wall 2.53E-03 2.67E-03 3.94E-03 5.83E-03 9.77E-03

Kidneys 9.52E-02 1.08E-01 1.38E-01 2.14E-01 3.19E-01

Liver 1.07E-02 1.13E-02 1.61E-02 2.17E-02 3.40E-02

Lungs 2.46E-03 2.54E-03 3.66E-03 5.39E-03 8.71E-03

Ovaries 2.48E-03 2.70E-03 4.02E-03 6.20E-03 1.03E-02

Pancreas 6.90E-03 7.57E-03 1.07E-02 1.54E-02 2.17E-02

Salivary Glands 1.25E-03 1.49E-03 2.35E-03 3.78E-03 6.67E-03

Red Marrow 3.49E-03 3.11E-03 3.78E-03 5.47E-03 1.09E-02

Osteogenic Cells 4.38E-03 3.95E-03 4.42E-03 5.18E-03 7.90E-03

Spleen 1.87E-02 1.93E-02 2.81E-02 4.14E-02 6.58E-02

Thymus 1.74E-03 1.98E-03 2.81E-03 4.39E-03 7.66E-03

Thyroid 1.39E-03 1.65E-03 2.61E-03 4.17E-03 7.22E-03

Urinary Bladder Wall 1.90E-03 2.10E-03 2.98E-03 4.36E-03 7.69E-03

Uterus 2.25E-03 2.53E-03 3.96E-03 6.11E-03 1.00E-02

Total Body 2.91E-03 2.52E-03 3.78E-03 5.83E-03 1.00E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.71E-02 2.02E-02 2.79E-02 3.81E-02 5.62E-02

Brain 1.08E-03 1.21E-03 1.97E-03 3.24E-03 5.61E-03

Breasts 1.27E-03 1.37E-03 ----- ----- -----

Esophagus 2.67E-03 3.28E-03 4.95E-03 7.04E-03 1.19E-02

Eyes 1.08E-03 1.22E-03 1.97E-03 3.18E-03 5.54E-03

Gallbladder Wall 7.48E-03 8.66E-03 1.21E-02 1.69E-02 2.45E-02

Left colon 4.45E-03 5.10E-03 6.67E-03 9.48E-03 1.55E-02

Small Intestine 3.74E-03 4.29E-03 6.30E-03 9.32E-03 1.48E-02

Stomach Wall 3.94E-03 4.56E-03 6.78E-03 9.47E-03 1.47E-02

Right colon 3.94E-03 4.72E-03 7.56E-03 1.12E-02 1.77E-02

Rectum 2.02E-03 2.37E-03 3.70E-03 5.47E-03 9.62E-03

Heart Wall 2.43E-03 2.82E-03 4.18E-03 6.12E-03 1.02E-02

Kidneys 9.08E-02 1.06E-01 1.39E-01 2.14E-01 3.20E-01

Liver 9.64E-03 1.13E-02 1.60E-02 2.16E-02 3.38E-02

Lungs 2.23E-03 2.54E-03 3.71E-03 5.45E-03 8.95E-03

Ovaries 2.48E-03 2.70E-03 4.02E-03 6.20E-03 1.03E-02

Pancreas 5.59E-03 6.42E-03 9.16E-03 1.32E-02 1.94E-02

Prostate 2.11E-03 2.84E-03 4.19E-03 6.08E-03 1.06E-02

Salivary Glands 1.20E-03 1.48E-03 2.36E-03 3.80E-03 6.69E-03

Red Marrow 3.13E-03 3.13E-03 4.55E-03 6.01E-03 1.21E-02

Osteogenic Cells 4.14E-03 4.04E-03 5.35E-03 6.30E-03 1.05E-02

Spleen 1.68E-02 1.84E-02 2.71E-02 3.98E-02 6.34E-02

Testes 1.03E-03 1.29E-03 1.96E-03 3.18E-03 5.61E-03

Thymus 1.61E-03 1.99E-03 2.83E-03 4.49E-03 7.82E-03

Thyroid 1.35E-03 1.66E-03 2.65E-03 4.20E-03 7.34E-03

Urinary Bladder Wall 1.74E-03 2.16E-03 3.12E-03 4.55E-03 8.10E-03

Uterus 2.25E-03 2.53E-03 3.96E-03 6.11E-03 1.00E-02

Total Body 2.47E-03 2.50E-03 3.81E-03 5.89E-03 1.00E-02

Effective Dose 3.93E-03 4.50E-03 6.29E-03 9.07E-03 1.46E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Pertechnegas

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.11E-03 6.26E-03 8.83E-03 1.27E-02 2.12E-02

Brain 1.95E-03 2.44E-03 3.98E-03 6.35E-03 1.09E-02

Esophagus 4.85E-03 6.19E-03 9.50E-03 1.42E-02 2.36E-02

Eyes 1.90E-03 2.39E-03 3.91E-03 6.29E-03 1.09E-02

Gallbladder Wall 6.12E-03 7.87E-03 1.27E-02 1.86E-02 2.50E-02

Left colon 3.84E-02 4.52E-02 7.40E-02 1.04E-01 1.30E-01

Small Intestine 1.30E-02 1.54E-02 2.34E-02 3.28E-02 4.59E-02

Stomach Wall 8.88E-03 1.13E-02 1.71E-02 2.34E-02 3.36E-02

Right colon 2.53E-02 2.86E-02 4.53E-02 6.35E-02 7.67E-02

Rectum 9.53E-03 1.20E-02 1.91E-02 2.53E-02 3.67E-02

Heart Wall 4.89E-03 6.07E-03 8.93E-03 1.27E-02 2.12E-02

Kidneys 4.15E-03 5.03E-03 7.56E-03 1.11E-02 1.79E-02

Liver 4.20E-03 5.30E-03 8.15E-03 1.17E-02 1.90E-02

Lungs 1.16E-02 1.50E-02 2.47E-02 3.89E-02 7.26E-02

Pancreas 7.82E-03 9.10E-03 1.24E-02 1.76E-02 2.70E-02

Prostate 5.39E-03 7.25E-03 1.62E-02 1.23E-02 2.10E-02

Salivary Glands 8.24E-03 1.02E-02 1.54E-02 2.06E-02 3.02E-02

Red Marrow 3.22E-03 3.79E-03 5.09E-03 6.90E-03 1.20E-02

Osteogenic Cells 5.21E-03 5.68E-03 7.68E-03 1.03E-02 1.75E-02

Spleen 4.23E-03 5.24E-03 7.52E-03 1.08E-02 1.80E-02

Testes 2.40E-03 3.01E-03 5.26E-03 6.68E-03 1.17E-02

Thymus 3.87E-03 5.19E-03 7.23E-03 1.15E-02 1.98E-02

Thyroid 2.02E-02 3.17E-02 4.69E-02 1.01E-01 1.80E-01

Urinary Bladder Wall 2.00E-02 2.48E-02 3.62E-02 3.34E-02 5.99E-02

Total Body 3.15E-03 3.82E-03 5.94E-03 9.00E-03 1.54E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.27E-03 5.43E-03 7.93E-03 1.14E-02 1.90E-02

Brain 2.41E-03 2.48E-03 3.99E-03 6.37E-03 1.09E-02

Breasts 2.67E-03 2.85E-03 ----- ----- -----

Esophagus 5.09E-03 5.88E-03 8.82E-03 1.30E-02 2.14E-02

Eyes 2.39E-03 2.47E-03 3.97E-03 6.35E-03 1.09E-02

Gallbladder Wall 7.70E-03 7.51E-03 1.17E-02 1.64E-02 2.19E-02

Left colon 4.25E-02 4.40E-02 7.21E-02 1.01E-01 1.26E-01

Small Intestine 1.49E-02 1.48E-02 2.26E-02 3.17E-02 4.46E-02

Stomach Wall 1.01E-02 1.09E-02 1.66E-02 2.27E-02 3.24E-02

Right colon 3.11E-02 2.83E-02 4.47E-02 6.26E-02 7.65E-02

Rectum 1.30E-02 1.41E-02 2.09E-02 2.59E-02 3.80E-02

Heart Wall 5.70E-03 6.04E-03 8.44E-03 1.22E-02 2.05E-02

Kidneys 5.02E-03 4.97E-03 7.41E-03 1.11E-02 1.81E-02

Liver 4.92E-03 4.95E-03 7.50E-03 1.09E-02 1.80E-02

Lungs 1.42E-02 1.69E-02 2.42E-02 3.81E-02 7.13E-02

Ovaries 6.48E-03 7.12E-03 9.75E-03 1.39E-02 2.34E-02

Pancreas 6.61E-03 6.77E-03 9.72E-03 1.42E-02 2.16E-02

Salivary Glands 9.63E-03 1.06E-02 1.54E-02 2.05E-02 3.00E-02

Red Marrow 3.99E-03 3.61E-03 4.01E-03 4.76E-03 7.21E-03

Osteogenic Cells 6.19E-03 5.61E-03 5.81E-03 6.30E-03 7.38E-03

Spleen 5.76E-03 5.81E-03 8.04E-03 1.16E-02 1.89E-02

Thymus 5.47E-03 5.65E-03 8.05E-03 1.20E-02 1.99E-02

Thyroid 2.31E-02 3.17E-02 4.69E-02 1.00E-01 1.81E-01

Urinary Bladder Wall 2.25E-02 2.29E-02 3.28E-02 3.16E-02 5.62E-02

Uterus 8.81E-03 1.00E-02 1.63E-02 1.85E-02 2.86E-02

Total Body 4.46E-03 3.92E-03 5.91E-03 8.92E-03 1.53E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.10E-03 5.84E-03 8.38E-03 1.20E-02 2.01E-02

Brain 2.18E-03 2.46E-03 3.99E-03 6.36E-03 1.09E-02

Breasts 2.66E-03 2.85E-03 ----- ----- -----

Esophagus 4.95E-03 6.04E-03 9.16E-03 1.36E-02 2.25E-02

Eyes 2.15E-03 2.43E-03 3.94E-03 6.32E-03 1.09E-02

Gallbladder Wall 6.55E-03 7.69E-03 1.22E-02 1.75E-02 2.34E-02

Left colon 3.74E-02 4.46E-02 7.31E-02 1.02E-01 1.28E-01

Small Intestine 1.37E-02 1.51E-02 2.30E-02 3.22E-02 4.53E-02

Stomach Wall 9.36E-03 1.11E-02 1.68E-02 2.31E-02 3.30E-02

Right colon 2.49E-02 2.84E-02 4.50E-02 6.30E-02 7.66E-02

Rectum 1.04E-02 1.31E-02 2.00E-02 2.56E-02 3.73E-02

Heart Wall 5.27E-03 6.05E-03 8.68E-03 1.24E-02 2.08E-02

Kidneys 4.44E-03 5.00E-03 7.49E-03 1.11E-02 1.80E-02

Liver 4.47E-03 5.12E-03 7.83E-03 1.13E-02 1.85E-02

Lungs 1.29E-02 1.59E-02 2.44E-02 3.85E-02 7.19E-02

Ovaries 6.18E-03 7.12E-03 9.75E-03 1.39E-02 2.34E-02

Pancreas 7.08E-03 7.94E-03 1.10E-02 1.59E-02 2.43E-02

Prostate 5.39E-03 7.25E-03 1.62E-02 1.23E-02 2.10E-02

Salivary Glands 8.94E-03 1.04E-02 1.54E-02 2.05E-02 3.01E-02

Red Marrow 3.55E-03 3.70E-03 4.55E-03 5.83E-03 9.61E-03

Osteogenic Cells 5.64E-03 5.65E-03 6.75E-03 8.32E-03 1.24E-02

Spleen 4.87E-03 5.52E-03 7.78E-03 1.12E-02 1.84E-02

Testes 2.40E-03 3.01E-03 5.26E-03 6.68E-03 1.17E-02

Thymus 4.66E-03 5.42E-03 7.64E-03 1.18E-02 1.98E-02

Thyroid 2.17E-02 3.17E-02 4.69E-02 1.01E-01 1.81E-01

Urinary Bladder Wall 2.11E-02 2.38E-02 3.45E-02 3.25E-02 5.80E-02

Uterus 8.39E-03 1.00E-02 1.63E-02 1.85E-02 2.86E-02

Total Body 3.72E-03 3.87E-03 5.92E-03 8.96E-03 1.54E-02

Effective Dose 8.13E-03 1.19E-02 1.79E-02 2.62E-02 4.07E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Pertechnetate

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.25E-03 8.14E-03 1.12E-02 1.54E-02 2.50E-02

Brain 2.06E-03 2.58E-03 4.20E-03 6.67E-03 1.15E-02

Esophagus 4.19E-03 5.52E-03 8.35E-03 1.22E-02 2.01E-02

Eyes 2.00E-03 2.53E-03 4.13E-03 6.70E-03 1.17E-02

Gallbladder Wall 8.35E-03 1.10E-02 1.73E-02 2.47E-02 3.34E-02

Left colon 5.58E-02 6.85E-02 1.12E-01 1.55E-01 1.96E-01

Small Intestine 7.96E-03 1.99E-02 2.97E-02 4.19E-02 5.84E-02

Stomach Wall 1.86E-02 2.35E-02 3.61E-02 4.92E-02 6.60E-02

Right colon 4.68E-02 5.26E-02 8.19E-02 1.15E-01 1.38E-01

Rectum 1.04E-02 1.39E-02 2.21E-02 3.05E-02 4.45E-02

Heart Wall 4.29E-03 5.53E-03 8.05E-03 1.14E-02 1.91E-02

Kidneys 5.58E-03 7.14E-03 1.01E-02 1.36E-02 2.15E-02

Liver 4.39E-03 5.75E-03 8.98E-03 9.84E-03 1.53E-02

Lungs 3.27E-03 4.19E-03 6.18E-03 9.06E-03 1.55E-02

Pancreas 1.06E-02 1.34E-02 1.78E-02 2.47E-02 3.71E-02

Prostate 5.53E-03 7.86E-03 1.71E-02 1.51E-02 2.55E-02

Salivary Glands 9.85E-03 1.22E-02 1.84E-02 8.03E-03 1.42E-02

Red Marrow 3.01E-03 3.72E-03 5.14E-03 8.32E-03 1.57E-02

Osteogenic Cells 5.19E-03 5.92E-03 8.07E-03 1.16E-02 2.04E-02

Spleen 5.22E-03 6.72E-03 9.45E-03 1.35E-02 2.23E-02

Testes 2.49E-03 3.17E-03 5.46E-03 7.66E-03 1.34E-02

Thymus 2.81E-03 3.75E-03 5.44E-03 8.69E-03 1.57E-02

Thyroid 2.33E-02 3.71E-02 5.50E-02 1.21E-01 2.16E-01

Urinary Bladder Wall 1.84E-02 2.33E-02 3.40E-02 4.38E-02 7.85E-02

Total Body 3.24E-03 4.14E-03 6.41E-03 9.99E-03 1.70E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.75E-03 6.86E-03 9.96E-03 1.36E-02 2.28E-02

Brain 2.54E-03 2.61E-03 4.20E-03 6.65E-03 1.15E-02

Breasts 2.36E-03 2.51E-03 ----- ----- -----

Esophagus 3.78E-03 4.38E-03 6.78E-03 9.76E-03 1.69E-02

Eyes 2.52E-03 2.60E-03 4.16E-03 6.66E-03 1.15E-02

Gallbladder Wall 1.06E-02 1.02E-02 1.59E-02 2.17E-02 2.92E-02

Left colon 6.17E-02 6.67E-02 1.09E-01 1.51E-01 1.89E-01

Small Intestine 1.92E-02 1.89E-02 2.85E-02 4.03E-02 5.65E-02

Stomach Wall 2.15E-02 2.37E-02 3.62E-02 4.94E-02 6.63E-02

Right colon 5.64E-02 5.25E-02 8.18E-02 1.15E-01 1.40E-01

Rectum 1.46E-02 1.56E-02 2.34E-02 3.14E-02 4.62E-02

Heart Wall 4.32E-03 4.41E-03 6.43E-03 9.47E-03 1.60E-02

Kidneys 7.09E-03 7.09E-03 9.99E-03 1.37E-02 2.22E-02

Liver 5.20E-03 5.12E-03 7.89E-03 8.58E-03 1.38E-02

Lungs 3.79E-03 3.80E-03 5.50E-03 8.17E-03 1.41E-02

Ovaries 7.52E-03 8.11E-03 1.11E-02 1.74E-02 2.92E-02

Pancreas 9.03E-03 9.23E-03 1.30E-02 1.84E-02 2.72E-02

Salivary Glands 1.15E-02 1.26E-02 1.83E-02 7.96E-03 1.41E-02

Red Marrow 3.99E-03 3.64E-03 4.09E-03 6.09E-03 1.04E-02

Osteogenic Cells 6.36E-03 5.80E-03 6.02E-03 6.90E-03 9.11E-03

Spleen 7.96E-03 8.04E-03 1.08E-02 1.54E-02 2.43E-02

Thymus 3.38E-03 3.55E-03 5.34E-03 8.33E-03 1.47E-02

Thyroid 2.68E-02 3.70E-02 5.49E-02 1.20E-01 2.18E-01

Urinary Bladder Wall 2.13E-02 2.18E-02 3.12E-02 4.14E-02 7.36E-02

Uterus 9.73E-03 1.08E-02 1.77E-02 2.33E-02 3.58E-02

Total Body 4.89E-03 4.21E-03 6.36E-03 9.85E-03 1.69E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.19E-03 7.50E-03 1.06E-02 1.45E-02 2.39E-02

Brain 2.30E-03 2.60E-03 4.20E-03 6.66E-03 1.15E-02

Breasts 2.30E-03 2.51E-03 ----- ----- -----

Esophagus 3.91E-03 4.95E-03 7.57E-03 1.10E-02 1.85E-02

Eyes 2.26E-03 2.57E-03 4.15E-03 6.68E-03 1.16E-02

Gallbladder Wall 8.43E-03 1.06E-02 1.66E-02 2.32E-02 3.13E-02

Left colon 5.44E-02 6.76E-02 1.11E-01 1.53E-01 1.93E-01

Small Intestine 7.83E-03 1.94E-02 2.91E-02 4.11E-02 5.74E-02

Stomach Wall 1.96E-02 2.36E-02 3.61E-02 4.93E-02 6.62E-02

Right colon 4.54E-02 5.26E-02 8.18E-02 1.15E-01 1.39E-01

Rectum 1.13E-02 1.48E-02 2.27E-02 3.10E-02 4.53E-02

Heart Wall 4.23E-03 4.97E-03 7.24E-03 1.04E-02 1.75E-02

Kidneys 5.86E-03 7.11E-03 1.00E-02 1.36E-02 2.19E-02

Liver 4.53E-03 5.44E-03 8.44E-03 9.21E-03 1.46E-02

Lungs 3.48E-03 4.00E-03 5.84E-03 8.61E-03 1.48E-02

Ovaries 6.30E-03 8.11E-03 1.11E-02 1.74E-02 2.92E-02

Pancreas 9.04E-03 1.13E-02 1.54E-02 2.15E-02 3.21E-02

Prostate 5.53E-03 7.86E-03 1.71E-02 1.51E-02 2.55E-02

Salivary Glands 1.07E-02 1.24E-02 1.84E-02 8.00E-03 1.41E-02

Red Marrow 3.32E-03 3.68E-03 4.62E-03 7.21E-03 1.31E-02

Osteogenic Cells 5.53E-03 5.86E-03 7.04E-03 9.25E-03 1.48E-02

Spleen 6.23E-03 7.38E-03 1.01E-02 1.45E-02 2.33E-02

Testes 2.49E-03 3.17E-03 5.46E-03 7.66E-03 1.34E-02

Thymus 3.07E-03 3.65E-03 5.39E-03 8.51E-03 1.52E-02

Thyroid 2.51E-02 3.70E-02 5.50E-02 1.20E-01 2.17E-01

Urinary Bladder Wall 1.95E-02 2.25E-02 3.26E-02 4.26E-02 7.60E-02

Uterus 8.15E-03 1.08E-02 1.77E-02 2.33E-02 3.58E-02

Total Body 3.78E-03 4.18E-03 6.39E-03 9.92E-03 1.69E-02

Effective Dose 1.20E-02 1.47E-02 2.23E-02 3.26E-02 4.71E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Phosphates and Phosphonates

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.00E-03 3.83E-03 5.40E-03 7.72E-03 1.32E-02

Brain 1.69E-03 2.04E-03 2.83E-03 4.29E-03 6.04E-03

Esophagus 1.43E-03 1.69E-03 2.42E-03 3.69E-03 5.86E-03

Eyes 1.69E-03 2.04E-03 2.83E-03 4.29E-03 6.06E-03

Gallbladder Wall 1.38E-03 1.81E-03 2.97E-03 4.23E-03 6.38E-03

Left colon 2.00E-03 2.49E-03 3.55E-03 5.19E-03 8.89E-03

Small Intestine 2.48E-03 3.07E-03 4.75E-03 6.40E-03 9.35E-03

Stomach Wall 1.15E-03 1.48E-03 2.39E-03 3.45E-03 6.25E-03

Right colon 1.75E-03 2.20E-03 3.29E-03 4.72E-03 7.67E-03

Rectum 5.53E-03 7.11E-03 1.12E-02 1.38E-02 1.74E-02

Heart Wall 1.27E-03 1.58E-03 2.31E-03 3.43E-03 6.00E-03

Kidneys 7.69E-03 9.39E-03 1.28E-02 1.96E-02 3.03E-02

Liver 1.34E-03 1.73E-03 2.55E-03 3.76E-03 6.63E-03

Lungs 1.28E-03 1.64E-03 2.42E-03 3.66E-03 6.74E-03

Pancreas 1.61E-03 2.01E-03 2.97E-03 4.43E-03 7.68E-03

Prostate 6.81E-03 8.81E-03 2.75E-02 1.38E-02 1.70E-02

Salivary Glands 1.36E-03 1.59E-03 2.27E-03 3.51E-03 5.59E-03

Red Marrow 5.75E-03 7.24E-03 1.23E-02 2.26E-02 5.39E-02

Osteogenic Cells 4.06E-02 5.18E-02 8.28E-02 1.37E-01 3.21E-01

Spleen 1.54E-03 1.98E-03 3.00E-03 4.72E-03 7.91E-03

Testes 2.17E-03 2.71E-03 6.21E-03 5.26E-03 7.37E-03

Thymus 1.07E-03 1.35E-03 1.96E-03 3.04E-03 5.29E-03

Thyroid 1.37E-03 1.61E-03 2.29E-03 3.54E-03 5.64E-03

Urinary Bladder Wall 5.35E-02 6.50E-02 9.56E-02 1.13E-01 1.34E-01

Total Body 2.69E-03 3.29E-03 5.06E-03 7.48E-03 1.21E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.17E-03 3.36E-03 4.72E-03 6.97E-03 1.24E-02

Brain 2.06E-03 2.05E-03 2.83E-03 4.29E-03 6.04E-03

Breasts 8.93E-04 9.16E-04 ----- ----- -----

Esophagus 1.60E-03 1.71E-03 2.46E-03 3.74E-03 5.94E-03

Eyes 2.06E-03 2.05E-03 2.83E-03 4.29E-03 6.05E-03

Gallbladder Wall 2.16E-03 2.34E-03 3.67E-03 5.20E-03 7.81E-03

Left colon 2.70E-03 3.08E-03 4.69E-03 7.45E-03 1.22E-02

Small Intestine 3.04E-03 3.28E-03 4.78E-03 7.01E-03 1.03E-02

Stomach Wall 1.53E-03 1.56E-03 2.47E-03 3.62E-03 6.48E-03

Right colon 1.97E-03 2.09E-03 3.29E-03 5.01E-03 8.21E-03

Rectum 1.08E-02 1.45E-02 1.86E-02 2.46E-02 3.20E-02

Heart Wall 1.54E-03 1.58E-03 2.28E-03 3.41E-03 5.98E-03

Kidneys 8.66E-03 9.61E-03 1.27E-02 1.96E-02 3.04E-02

Liver 1.68E-03 1.75E-03 2.56E-03 3.83E-03 6.78E-03

Lungs 1.64E-03 1.65E-03 2.41E-03 3.66E-03 6.72E-03

Ovaries 5.63E-03 7.44E-03 8.74E-03 1.48E-02 2.27E-02

Pancreas 2.09E-03 2.19E-03 3.20E-03 4.88E-03 8.24E-03

Salivary Glands 1.51E-03 1.61E-03 2.28E-03 3.52E-03 5.60E-03

Red Marrow 7.08E-03 7.32E-03 1.19E-02 2.22E-02 5.29E-02

Osteogenic Cells 4.15E-02 5.17E-02 8.22E-02 1.36E-01 3.19E-01

Spleen 2.03E-03 2.12E-03 3.13E-03 4.97E-03 8.40E-03

Thymus 1.31E-03 1.35E-03 1.94E-03 3.03E-03 5.29E-03

Thyroid 1.51E-03 1.61E-03 2.28E-03 3.52E-03 5.61E-03

Urinary Bladder Wall 5.73E-02 5.74E-02 8.30E-02 1.24E-01 1.81E-01

Uterus 1.09E-02 1.45E-02 2.30E-02 3.00E-02 3.73E-02

Total Body 3.37E-03 3.31E-03 4.98E-03 7.65E-03 1.28E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.09E-03 3.59E-03 5.06E-03 7.34E-03 1.28E-02

Brain 1.88E-03 2.04E-03 2.83E-03 4.29E-03 6.04E-03

Breasts 8.93E-04 9.16E-04 0.00E+00 0.00E+00 0.00E+00

Esophagus 1.51E-03 1.70E-03 2.44E-03 3.71E-03 5.90E-03

Eyes 1.88E-03 2.05E-03 2.83E-03 4.29E-03 6.06E-03

Gallbladder Wall 1.77E-03 2.08E-03 3.32E-03 4.72E-03 7.09E-03

Left colon 2.35E-03 2.79E-03 4.12E-03 6.32E-03 1.05E-02

Small Intestine 2.76E-03 3.17E-03 4.77E-03 6.71E-03 9.81E-03

Stomach Wall 1.34E-03 1.52E-03 2.43E-03 3.54E-03 6.36E-03

Right colon 1.86E-03 2.14E-03 3.29E-03 4.86E-03 7.94E-03

Rectum 8.17E-03 1.08E-02 1.49E-02 1.92E-02 2.47E-02

Heart Wall 1.40E-03 1.58E-03 2.30E-03 3.42E-03 5.99E-03

Kidneys 8.17E-03 9.50E-03 1.27E-02 1.96E-02 3.04E-02

Liver 1.51E-03 1.74E-03 2.55E-03 3.79E-03 6.71E-03

Lungs 1.46E-03 1.64E-03 2.42E-03 3.66E-03 6.73E-03

Ovaries 5.63E-03 7.44E-03 8.74E-03 1.48E-02 2.27E-02

Pancreas 1.85E-03 2.10E-03 3.08E-03 4.65E-03 7.96E-03

Prostate 6.81E-03 8.81E-03 2.75E-02 1.38E-02 1.70E-02

Salivary Glands 1.43E-03 1.60E-03 2.27E-03 3.52E-03 5.60E-03

Red Marrow 6.41E-03 7.28E-03 1.21E-02 2.24E-02 5.34E-02

Osteogenic Cells 4.10E-02 5.18E-02 8.25E-02 1.37E-01 3.20E-01

Spleen 1.79E-03 2.05E-03 3.06E-03 4.85E-03 8.15E-03

Testes 2.17E-03 2.71E-03 6.21E-03 5.26E-03 7.37E-03

Thymus 1.19E-03 1.35E-03 1.95E-03 3.04E-03 5.29E-03

Thyroid 1.44E-03 1.61E-03 2.29E-03 3.53E-03 5.62E-03

Urinary Bladder Wall 5.54E-02 6.12E-02 8.93E-02 1.18E-01 1.58E-01

Uterus 1.09E-02 1.45E-02 2.30E-02 3.00E-02 3.73E-02

Total Body 3.03E-03 3.30E-03 5.02E-03 7.56E-03 1.25E-02

Effective Dose 5.03E-03 5.76E-03 8.63E-03 1.28E-02 2.24E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Red Blood Cells (RBCs)

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 4.97E-03 6.18E-03 9.18E-03 1.38E-02 2.43E-02

Brain 3.55E-03 4.43E-03 7.26E-03 1.17E-02 2.01E-02

Esophagus 4.25E-03 5.38E-03 8.59E-03 1.38E-02 2.43E-02

Eyes 3.55E-03 4.43E-03 7.26E-03 1.17E-02 2.03E-02

Gallbladder Wall 5.16E-03 6.94E-03 1.12E-02 1.65E-02 1.98E-02

Left colon 5.08E-03 6.41E-03 1.01E-02 1.47E-02 2.65E-02

Small Intestine 5.26E-03 6.57E-03 9.96E-03 1.52E-02 2.59E-02

Stomach Wall 4.62E-03 6.13E-03 9.84E-03 1.38E-02 2.39E-02

Right colon 5.04E-03 6.59E-03 9.58E-03 1.53E-02 2.46E-02

Rectum 5.46E-03 6.91E-03 1.09E-02 1.57E-02 2.74E-02

Heart Wall 4.68E-03 5.88E-03 8.82E-03 1.32E-02 2.30E-02

Kidneys 4.98E-03 6.05E-03 8.49E-03 1.29E-02 2.07E-02

Liver 4.55E-03 5.69E-03 8.83E-03 1.32E-02 2.29E-02

Lungs 4.11E-03 5.29E-03 7.90E-03 1.21E-02 2.14E-02

Pancreas 5.21E-03 6.54E-03 9.76E-03 1.49E-02 2.56E-02

Prostate 5.48E-03 7.55E-03 1.21E-02 1.49E-02 2.63E-02

Salivary Glands 4.24E-03 5.38E-03 8.59E-03 1.38E-02 2.42E-02

Red Marrow 4.01E-03 4.90E-03 7.58E-03 1.15E-02 2.14E-02

Osteogenic Cells 7.02E-03 8.29E-03 1.22E-02 1.77E-02 3.15E-02

Spleen 4.53E-03 5.70E-03 8.83E-03 1.32E-02 2.33E-02

Testes 3.89E-03 4.80E-03 7.41E-03 1.13E-02 1.98E-02

Thymus 4.17E-03 5.32E-03 7.91E-03 1.23E-02 2.19E-02

Thyroid 4.24E-03 5.38E-03 8.59E-03 1.37E-02 2.42E-02

Urinary Bladder Wall 1.09E-02 1.42E-02 2.03E-02 2.74E-02 4.14E-02

Total Body 4.12E-03 5.05E-03 7.78E-03 1.22E-02 2.12E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.05E-03 6.22E-03 9.17E-03 1.37E-02 2.43E-02

Brain 4.39E-03 4.51E-03 7.26E-03 1.17E-02 2.01E-02

Breasts 3.69E-03 3.93E-03 ----- ----- -----

Esophagus 4.54E-03 5.46E-03 8.59E-03 1.37E-02 2.41E-02

Eyes 4.39E-03 4.51E-03 7.26E-03 1.17E-02 2.01E-02

Gallbladder Wall 6.38E-03 7.05E-03 1.12E-02 1.65E-02 1.97E-02

Left colon 6.23E-03 6.55E-03 1.02E-02 1.49E-02 2.68E-02

Small Intestine 6.01E-03 6.66E-03 9.96E-03 1.51E-02 2.59E-02

Stomach Wall 5.73E-03 6.21E-03 9.84E-03 1.38E-02 2.39E-02

Right colon 6.18E-03 6.65E-03 9.58E-03 1.53E-02 2.46E-02

Rectum 7.11E-03 7.76E-03 1.17E-02 1.64E-02 2.90E-02

Heart Wall 5.79E-03 5.95E-03 8.82E-03 1.32E-02 2.30E-02

Kidneys 5.85E-03 6.10E-03 8.49E-03 1.28E-02 2.07E-02

Liver 5.57E-03 5.76E-03 8.82E-03 1.32E-02 2.29E-02

Lungs 5.35E-03 5.37E-03 7.90E-03 1.20E-02 2.13E-02

Ovaries 6.69E-03 7.19E-03 1.04E-02 1.58E-02 2.79E-02

Pancreas 6.39E-03 6.62E-03 9.76E-03 1.49E-02 2.56E-02

Salivary Glands 4.54E-03 5.45E-03 8.59E-03 1.37E-02 2.41E-02

Red Marrow 4.78E-03 4.92E-03 5.81E-03 7.60E-03 1.25E-02

Osteogenic Cells 8.16E-03 8.38E-03 8.98E-03 9.92E-03 1.25E-02

Spleen 5.58E-03 5.78E-03 8.83E-03 1.32E-02 2.32E-02

Thymus 5.22E-03 5.39E-03 7.91E-03 1.22E-02 2.18E-02

Thyroid 4.54E-03 5.45E-03 8.59E-03 1.37E-02 2.41E-02

Urinary Bladder Wall 1.28E-02 1.34E-02 1.90E-02 2.60E-02 4.76E-02

Uterus 7.17E-03 7.97E-03 1.21E-02 1.74E-02 2.95E-02

Total Body 4.99E-03 5.12E-03 7.77E-03 1.22E-02 2.13E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.51E-03 6.20E-03 9.17E-03 1.37E-02 2.43E-02

Brain 3.97E-03 4.47E-03 7.26E-03 1.17E-02 2.01E-02

Breasts 3.69E-03 3.93E-03 0.00E+00 0.00E+00 0.00E+00

Esophagus 4.39E-03 5.42E-03 8.59E-03 1.38E-02 2.42E-02

Eyes 3.97E-03 4.47E-03 7.26E-03 1.17E-02 2.02E-02

Gallbladder Wall 5.77E-03 6.99E-03 1.12E-02 1.65E-02 1.98E-02

Left colon 5.65E-03 6.48E-03 1.02E-02 1.48E-02 2.66E-02

Small Intestine 5.64E-03 6.62E-03 9.96E-03 1.52E-02 2.59E-02

Stomach Wall 5.17E-03 6.17E-03 9.84E-03 1.38E-02 2.39E-02

Right colon 5.61E-03 6.62E-03 9.58E-03 1.53E-02 2.46E-02

Rectum 6.28E-03 7.33E-03 1.13E-02 1.60E-02 2.82E-02

Heart Wall 5.24E-03 5.91E-03 8.82E-03 1.32E-02 2.30E-02

Kidneys 5.41E-03 6.08E-03 8.49E-03 1.28E-02 2.07E-02

Liver 5.06E-03 5.72E-03 8.82E-03 1.32E-02 2.29E-02

Lungs 4.73E-03 5.33E-03 7.90E-03 1.21E-02 2.14E-02

Ovaries 6.69E-03 7.19E-03 1.04E-02 1.58E-02 2.79E-02

Pancreas 5.80E-03 6.58E-03 9.76E-03 1.49E-02 2.56E-02

Prostate 5.48E-03 7.55E-03 1.21E-02 1.49E-02 2.63E-02

Salivary Glands 4.39E-03 5.41E-03 8.59E-03 1.38E-02 2.42E-02

Red Marrow 4.40E-03 4.91E-03 6.70E-03 9.55E-03 1.69E-02

Osteogenic Cells 7.59E-03 8.34E-03 1.06E-02 1.38E-02 2.20E-02

Spleen 5.05E-03 5.74E-03 8.83E-03 1.32E-02 2.32E-02

Testes 3.89E-03 4.80E-03 7.41E-03 1.13E-02 1.98E-02

Thymus 4.70E-03 5.35E-03 7.91E-03 1.23E-02 2.18E-02

Thyroid 4.39E-03 5.41E-03 8.59E-03 1.37E-02 2.42E-02

Urinary Bladder Wall 1.19E-02 1.38E-02 1.97E-02 2.67E-02 4.45E-02

Uterus 7.17E-03 7.97E-03 1.21E-02 1.74E-02 2.95E-02

Total Body 4.56E-03 5.08E-03 7.78E-03 1.22E-02 2.12E-02

Effective Dose 4.67E-03 5.39E-03 7.70E-03 1.13E-02 1.96E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Technegas

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 4.63E-03 6.34E-03 8.76E-03 1.21E-02 2.01E-02

Brain 3.65E-04 5.40E-04 9.57E-04 1.55E-03 2.64E-03

Esophagus 1.84E-02 2.34E-02 3.51E-02 4.96E-02 8.02E-02

Eyes 3.00E-04 4.51E-04 7.99E-04 1.30E-03 2.12E-03

Gallbladder Wall 3.79E-03 4.73E-03 7.03E-03 9.88E-03 1.55E-02

Left colon 4.27E-03 5.34E-03 7.74E-03 1.09E-02 1.59E-02

Small Intestine 1.70E-03 2.19E-03 3.57E-03 5.20E-03 8.11E-03

Stomach Wall 1.24E-02 1.51E-02 2.15E-02 2.91E-02 4.23E-02

Right colon 2.61E-03 3.06E-03 4.38E-03 6.33E-03 9.27E-03

Rectum 4.25E-04 5.71E-04 9.58E-04 1.52E-03 2.51E-03

Heart Wall 1.75E-02 2.12E-02 3.09E-02 4.14E-02 6.56E-02

Kidneys 2.24E-03 2.85E-03 4.51E-03 6.47E-03 9.91E-03

Liver 8.43E-03 1.06E-02 1.49E-02 2.00E-02 3.00E-02

Lungs 9.35E-02 1.21E-01 2.04E-01 3.25E-01 6.15E-01

Pancreas 6.40E-03 7.77E-03 1.14E-02 1.59E-02 2.66E-02

Prostate 2.78E-04 4.20E-04 8.34E-04 1.17E-03 2.30E-03

Salivary Glands 1.30E-03 1.79E-03 2.93E-03 4.23E-03 7.42E-03

Red Marrow 5.76E-03 6.10E-03 5.56E-03 5.13E-03 5.12E-03

Osteogenic Cells 6.36E-03 5.56E-03 5.36E-03 5.19E-03 4.67E-03

Spleen 5.02E-03 6.42E-03 9.09E-03 1.23E-02 1.84E-02

Testes 5.13E-05 7.29E-05 1.41E-04 2.21E-04 5.01E-04

Thymus 1.50E-02 2.10E-02 2.65E-02 4.25E-02 6.59E-02

Thyroid 1.24E-02 1.60E-02 2.25E-02 3.37E-02 4.63E-02

Urinary Bladder Wall 3.45E-04 4.65E-04 7.32E-04 9.96E-04 1.93E-03

Total Body 2.77E-03 3.38E-03 5.56E-03 8.56E-03 1.46E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.07E-03 7.26E-03 9.80E-03 1.25E-02 1.77E-02

Brain 5.44E-04 5.61E-04 1.07E-03 1.79E-03 2.92E-03

Breasts 6.37E-03 6.82E-03 ----- ----- -----

Esophagus 2.17E-02 2.43E-02 3.46E-02 4.93E-02 7.11E-02

Eyes 5.26E-04 5.58E-04 1.06E-03 1.67E-03 2.75E-03

Gallbladder Wall 2.65E-03 2.89E-03 4.57E-03 6.37E-03 9.57E-03

Left colon 3.25E-03 3.48E-03 5.23E-03 7.40E-03 1.04E-02

Small Intestine 1.80E-03 1.84E-03 2.88E-03 4.38E-03 6.49E-03

Stomach Wall 1.01E-02 1.08E-02 1.50E-02 2.07E-02 3.02E-02

Right colon 2.11E-03 2.07E-03 3.00E-03 4.37E-03 5.80E-03

Rectum 4.74E-04 5.04E-04 8.05E-04 1.25E-03 1.98E-03

Heart Wall 2.29E-02 2.56E-02 3.33E-02 4.57E-02 7.38E-02

Kidneys 2.61E-03 2.85E-03 4.15E-03 6.28E-03 8.96E-03

Liver 9.50E-03 1.01E-02 1.40E-02 1.91E-02 2.84E-02

Lungs 1.14E-01 1.41E-01 2.02E-01 3.21E-01 6.08E-01

Ovaries 3.58E-04 3.98E-04 6.85E-04 1.20E-03 1.95E-03

Pancreas 5.09E-03 5.87E-03 8.43E-03 1.18E-02 1.50E-02

Salivary Glands 1.79E-03 2.01E-03 3.36E-03 4.98E-03 7.68E-03

Red Marrow 6.56E-03 4.68E-03 4.37E-03 3.75E-03 4.14E-03

Osteogenic Cells 7.96E-03 5.16E-03 4.90E-03 6.25E-03 4.35E-03

Spleen 5.49E-03 6.35E-03 8.81E-03 1.20E-02 1.86E-02

Thymus 2.55E-02 2.58E-02 3.45E-02 4.79E-02 7.02E-02

Thyroid 1.28E-02 1.56E-02 2.13E-02 2.89E-02 4.14E-02

Urinary Bladder Wall 4.05E-04 4.47E-04 6.44E-04 9.31E-04 1.66E-03

Uterus 3.62E-04 4.02E-04 7.11E-04 1.11E-03 1.88E-03

Total Body 5.46E-03 3.88E-03 5.68E-03 8.53E-03 1.46E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.34E-03 6.80E-03 9.28E-03 1.23E-02 1.89E-02

Brain 4.55E-04 5.51E-04 1.01E-03 1.67E-03 2.78E-03

Breasts 6.37E-03 6.82E-03 ----- ----- -----

Esophagus 2.01E-02 2.38E-02 3.48E-02 4.95E-02 7.56E-02

Eyes 4.13E-04 5.05E-04 9.32E-04 1.49E-03 2.44E-03

Gallbladder Wall 3.21E-03 3.81E-03 5.80E-03 8.12E-03 1.25E-02

Left colon 3.64E-03 4.41E-03 6.48E-03 9.14E-03 1.32E-02

Small Intestine 1.74E-03 2.01E-03 3.23E-03 4.79E-03 7.30E-03

Stomach Wall 1.12E-02 1.29E-02 1.83E-02 2.49E-02 3.62E-02

Right colon 2.22E-03 2.56E-03 3.69E-03 5.35E-03 7.53E-03

Rectum 4.16E-04 5.38E-04 8.82E-04 1.38E-03 2.25E-03

Heart Wall 2.02E-02 2.34E-02 3.21E-02 4.35E-02 6.97E-02

Kidneys 2.42E-03 2.85E-03 4.33E-03 6.37E-03 9.44E-03

Liver 8.96E-03 1.04E-02 1.45E-02 1.95E-02 2.92E-02

Lungs 1.04E-01 1.31E-01 2.03E-01 3.23E-01 6.11E-01

Ovaries 3.45E-04 3.98E-04 6.85E-04 1.20E-03 1.95E-03

Pancreas 5.74E-03 6.82E-03 9.94E-03 1.39E-02 2.08E-02

Prostate 2.78E-04 4.20E-04 8.34E-04 1.17E-03 2.30E-03

Salivary Glands 1.55E-03 1.90E-03 3.15E-03 4.60E-03 7.55E-03

Red Marrow 6.15E-03 5.39E-03 4.96E-03 4.44E-03 4.63E-03

Osteogenic Cells 7.16E-03 5.36E-03 5.13E-03 5.72E-03 4.51E-03

Spleen 5.25E-03 6.39E-03 8.95E-03 1.22E-02 1.85E-02

Testes 5.13E-05 7.29E-05 1.41E-04 2.21E-04 5.01E-04

Thymus 2.02E-02 2.34E-02 3.05E-02 4.52E-02 6.80E-02

Thyroid 1.26E-02 1.58E-02 2.19E-02 3.13E-02 4.38E-02

Urinary Bladder Wall 3.70E-04 4.56E-04 6.88E-04 9.64E-04 1.79E-03

Uterus 3.45E-04 4.02E-04 7.11E-04 1.11E-03 1.88E-03

Total Body 4.11E-03 3.63E-03 5.62E-03 8.55E-03 1.46E-02

Effective Dose 1.85E-02 2.25E-02 3.32E-02 5.10E-02 9.19E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Tetrofosmin - Rest

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 4.97E-03 6.18E-03 9.18E-03 1.38E-02 2.43E-02

Brain 3.55E-03 4.43E-03 7.26E-03 1.17E-02 2.01E-02

Esophagus 4.25E-03 5.38E-03 8.59E-03 1.38E-02 2.43E-02

Eyes 3.55E-03 4.43E-03 7.26E-03 1.17E-02 2.03E-02

Gallbladder Wall 5.16E-03 6.94E-03 1.12E-02 1.65E-02 1.98E-02

Left colon 5.08E-03 6.41E-03 1.01E-02 1.47E-02 2.65E-02

Small Intestine 5.26E-03 6.57E-03 9.96E-03 1.52E-02 2.59E-02

Stomach Wall 4.62E-03 6.13E-03 9.84E-03 1.38E-02 2.39E-02

Right colon 5.04E-03 6.59E-03 9.58E-03 1.53E-02 2.46E-02

Rectum 5.46E-03 6.91E-03 1.09E-02 1.57E-02 2.74E-02

Heart Wall 4.68E-03 5.88E-03 8.82E-03 1.32E-02 2.30E-02

Kidneys 4.98E-03 6.05E-03 8.49E-03 1.29E-02 2.07E-02

Liver 4.55E-03 5.69E-03 8.83E-03 1.32E-02 2.29E-02

Lungs 4.11E-03 5.29E-03 7.90E-03 1.21E-02 2.14E-02

Pancreas 5.21E-03 6.54E-03 9.76E-03 1.49E-02 2.56E-02

Prostate 5.48E-03 7.55E-03 1.21E-02 1.49E-02 2.63E-02

Salivary Glands 4.24E-03 5.38E-03 8.59E-03 1.38E-02 2.42E-02

Red Marrow 4.01E-03 4.90E-03 7.58E-03 1.15E-02 2.14E-02

Osteogenic Cells 7.02E-03 8.29E-03 1.22E-02 1.77E-02 3.15E-02

Spleen 4.53E-03 5.70E-03 8.83E-03 1.32E-02 2.33E-02

Testes 3.89E-03 4.80E-03 7.41E-03 1.13E-02 1.98E-02

Thymus 4.17E-03 5.32E-03 7.91E-03 1.23E-02 2.19E-02

Thyroid 4.24E-03 5.38E-03 8.59E-03 1.37E-02 2.42E-02

Urinary Bladder Wall 1.09E-02 1.42E-02 2.03E-02 2.74E-02 4.14E-02

Total Body 4.12E-03 5.05E-03 7.78E-03 1.22E-02 2.12E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.05E-03 6.22E-03 9.17E-03 1.37E-02 2.43E-02

Brain 4.39E-03 4.51E-03 7.26E-03 1.17E-02 2.01E-02

Breasts 3.69E-03 3.93E-03 ----- ----- -----

Esophagus 4.54E-03 5.46E-03 8.59E-03 1.37E-02 2.41E-02

Eyes 4.39E-03 4.51E-03 7.26E-03 1.17E-02 2.01E-02

Gallbladder Wall 6.38E-03 7.05E-03 1.12E-02 1.65E-02 1.97E-02

Left colon 6.23E-03 6.55E-03 1.02E-02 1.49E-02 2.68E-02

Small Intestine 6.01E-03 6.66E-03 9.96E-03 1.51E-02 2.59E-02

Stomach Wall 5.73E-03 6.21E-03 9.84E-03 1.38E-02 2.39E-02

Right colon 6.18E-03 6.65E-03 9.58E-03 1.53E-02 2.46E-02

Rectum 7.11E-03 7.76E-03 1.17E-02 1.64E-02 2.90E-02

Heart Wall 5.79E-03 5.95E-03 8.82E-03 1.32E-02 2.30E-02

Kidneys 5.85E-03 6.10E-03 8.49E-03 1.28E-02 2.07E-02

Liver 5.57E-03 5.76E-03 8.82E-03 1.32E-02 2.29E-02

Lungs 5.35E-03 5.37E-03 7.90E-03 1.20E-02 2.13E-02

Ovaries 6.69E-03 7.19E-03 1.04E-02 1.58E-02 2.79E-02

Pancreas 6.39E-03 6.62E-03 9.76E-03 1.49E-02 2.56E-02

Salivary Glands 4.54E-03 5.45E-03 8.59E-03 1.37E-02 2.41E-02

Red Marrow 4.78E-03 4.92E-03 5.81E-03 7.60E-03 1.25E-02

Osteogenic Cells 8.16E-03 8.38E-03 8.98E-03 9.92E-03 1.25E-02

Spleen 5.58E-03 5.78E-03 8.83E-03 1.32E-02 2.32E-02

Thymus 5.22E-03 5.39E-03 7.91E-03 1.22E-02 2.18E-02

Thyroid 4.54E-03 5.45E-03 8.59E-03 1.37E-02 2.41E-02

Urinary Bladder Wall 1.28E-02 1.34E-02 1.90E-02 2.60E-02 4.76E-02

Uterus 7.17E-03 7.97E-03 1.21E-02 1.74E-02 2.95E-02

Total Body 4.99E-03 5.12E-03 7.77E-03 1.22E-02 2.13E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.51E-03 6.20E-03 9.17E-03 1.37E-02 2.43E-02

Brain 3.97E-03 4.47E-03 7.26E-03 1.17E-02 2.01E-02

Breasts 3.69E-03 3.93E-03 ----- ----- -----

Esophagus 4.39E-03 5.42E-03 8.59E-03 1.38E-02 2.42E-02

Eyes 3.97E-03 4.47E-03 7.26E-03 1.17E-02 2.02E-02

Gallbladder Wall 5.77E-03 6.99E-03 1.12E-02 1.65E-02 1.98E-02

Left colon 5.65E-03 6.48E-03 1.02E-02 1.48E-02 2.66E-02

Small Intestine 5.64E-03 6.62E-03 9.96E-03 1.52E-02 2.59E-02

Stomach Wall 5.17E-03 6.17E-03 9.84E-03 1.38E-02 2.39E-02

Right colon 5.61E-03 6.62E-03 9.58E-03 1.53E-02 2.46E-02

Rectum 6.28E-03 7.33E-03 1.13E-02 1.60E-02 2.82E-02

Heart Wall 5.24E-03 5.91E-03 8.82E-03 1.32E-02 2.30E-02

Kidneys 5.41E-03 6.08E-03 8.49E-03 1.28E-02 2.07E-02

Liver 5.06E-03 5.72E-03 8.82E-03 1.32E-02 2.29E-02

Lungs 4.73E-03 5.33E-03 7.90E-03 1.21E-02 2.14E-02

Ovaries 6.69E-03 7.19E-03 1.04E-02 1.58E-02 2.79E-02

Pancreas 5.80E-03 6.58E-03 9.76E-03 1.49E-02 2.56E-02

Prostate 5.48E-03 7.55E-03 1.21E-02 1.49E-02 2.63E-02

Salivary Glands 4.39E-03 5.41E-03 8.59E-03 1.38E-02 2.42E-02

Red Marrow 4.40E-03 4.91E-03 6.70E-03 9.55E-03 1.69E-02

Osteogenic Cells 7.59E-03 8.34E-03 1.06E-02 1.38E-02 2.20E-02

Spleen 5.05E-03 5.74E-03 8.83E-03 1.32E-02 2.32E-02

Testes 3.89E-03 4.80E-03 7.41E-03 1.13E-02 1.98E-02

Thymus 4.70E-03 5.35E-03 7.91E-03 1.23E-02 2.18E-02

Thyroid 4.39E-03 5.41E-03 8.59E-03 1.37E-02 2.42E-02

Urinary Bladder Wall 1.19E-02 1.38E-02 1.97E-02 2.67E-02 4.45E-02

Uterus 7.17E-03 7.97E-03 1.21E-02 1.74E-02 2.95E-02

Total Body 4.56E-03 5.08E-03 7.78E-03 1.22E-02 2.12E-02

Effective Dose 4.67E-03 5.39E-03 7.70E-03 1.13E-02 1.96E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc Tetrofosmin - Stress

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.39E-03 7.87E-03 1.11E-02 1.61E-02 2.65E-02

Brain 2.82E-03 3.50E-03 5.71E-03 9.11E-03 1.56E-02

Esophagus 3.69E-03 4.77E-03 7.46E-03 1.17E-02 2.03E-02

Eyes 2.75E-03 3.44E-03 5.62E-03 9.05E-03 1.57E-02

Gallbladder Wall 3.14E-02 3.93E-02 6.26E-02 1.00E-01 1.67E-01

Left colon 2.89E-02 3.38E-02 5.52E-02 7.77E-02 1.02E-01

Small Intestine 1.38E-02 1.65E-02 2.51E-02 3.57E-02 5.09E-02

Stomach Wall 4.57E-03 6.16E-03 9.52E-03 1.32E-02 2.22E-02

Right colon 2.20E-02 2.53E-02 3.87E-02 5.50E-02 6.90E-02

Rectum 1.18E-02 1.48E-02 2.34E-02 3.23E-02 4.72E-02

Heart Wall 5.32E-03 6.96E-03 1.04E-02 1.56E-02 2.62E-02

Kidneys 1.09E-02 1.31E-02 1.79E-02 2.71E-02 4.13E-02

Liver 3.95E-03 5.02E-03 7.39E-03 1.01E-02 1.61E-02

Lungs 3.41E-03 4.38E-03 6.50E-03 9.87E-03 1.73E-02

Pancreas 7.14E-03 8.49E-03 1.18E-02 1.72E-02 2.72E-02

Prostate 5.91E-03 8.05E-03 1.50E-02 1.47E-02 2.56E-02

Salivary Glands 1.25E-02 1.54E-02 2.32E-02 3.09E-02 4.51E-02

Red Marrow 3.51E-03 4.24E-03 6.30E-03 9.10E-03 1.67E-02

Osteogenic Cells 6.18E-03 7.05E-03 1.01E-02 1.42E-02 2.49E-02

Spleen 4.63E-03 5.74E-03 8.48E-03 1.24E-02 2.13E-02

Testes 3.16E-03 3.93E-03 6.24E-03 9.09E-03 1.60E-02

Thymus 3.42E-03 4.44E-03 6.48E-03 1.01E-02 1.79E-02

Thyroid 4.93E-03 7.17E-03 1.08E-02 2.12E-02 3.76E-02

Urinary Bladder Wall 1.49E-02 1.89E-02 2.51E-02 2.75E-02 4.95E-02

Total Body 3.77E-03 4.59E-03 7.06E-03 1.09E-02 1.89E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.67E-03 6.94E-03 1.01E-02 1.45E-02 2.41E-02

Brain 3.46E-03 3.56E-03 5.71E-03 9.11E-03 1.56E-02

Breasts 2.90E-03 3.09E-03 ----- ----- -----

Esophagus 3.86E-03 4.60E-03 7.18E-03 1.11E-02 1.94E-02

Eyes 3.43E-03 3.54E-03 5.67E-03 9.08E-03 1.56E-02

Gallbladder Wall 3.74E-02 4.09E-02 6.22E-02 9.86E-02 1.65E-01

Left colon 3.20E-02 3.30E-02 5.36E-02 7.52E-02 9.83E-02

Small Intestine 1.62E-02 1.64E-02 2.49E-02 3.53E-02 5.08E-02

Stomach Wall 5.88E-03 6.24E-03 9.57E-03 1.33E-02 2.21E-02

Right colon 2.68E-02 2.49E-02 3.83E-02 5.42E-02 6.87E-02

Rectum 1.58E-02 1.61E-02 2.45E-02 3.27E-02 4.80E-02

Heart Wall 6.50E-03 6.84E-03 1.16E-02 1.51E-02 1.99E-02

Kidneys 1.28E-02 1.38E-02 1.84E-02 2.78E-02 4.26E-02

Liver 4.39E-03 4.28E-03 6.41E-03 8.90E-03 1.46E-02

Lungs 4.31E-03 4.31E-03 6.30E-03 9.58E-03 1.68E-02

Ovaries 7.51E-03 8.03E-03 1.12E-02 1.66E-02 2.81E-02

Pancreas 7.43E-03 7.61E-03 1.09E-02 1.61E-02 2.57E-02

Salivary Glands 1.46E-02 1.60E-02 2.32E-02 3.08E-02 4.48E-02

Red Marrow 4.41E-03 4.27E-03 4.88E-03 6.15E-03 9.67E-03

Osteogenic Cells 7.36E-03 7.14E-03 7.50E-03 8.13E-03 1.00E-02

Spleen 6.16E-03 6.22E-03 8.94E-03 1.31E-02 2.22E-02

Thymus 4.20E-03 4.35E-03 6.36E-03 9.83E-03 1.74E-02

Thyroid 5.40E-03 7.15E-03 1.08E-02 2.10E-02 3.76E-02

Urinary Bladder Wall 1.75E-02 1.80E-02 2.35E-02 2.66E-02 4.75E-02

Uterus 9.34E-03 1.03E-02 1.61E-02 2.08E-02 3.28E-02

Total Body 4.94E-03 4.68E-03 7.06E-03 1.09E-02 1.89E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.47E-03 7.41E-03 1.06E-02 1.53E-02 2.53E-02

Brain 3.14E-03 3.53E-03 5.71E-03 9.11E-03 1.56E-02

Breasts 2.89E-03 3.09E-03 ----- ----- -----

Esophagus 3.76E-03 4.69E-03 7.32E-03 1.14E-02 1.98E-02

Eyes 3.09E-03 3.49E-03 5.64E-03 9.07E-03 1.56E-02

Gallbladder Wall 3.41E-02 4.01E-02 6.24E-02 9.93E-02 1.66E-01

Left colon 2.85E-02 3.34E-02 5.44E-02 7.64E-02 1.00E-01

Small Intestine 1.48E-02 1.65E-02 2.50E-02 3.55E-02 5.08E-02

Stomach Wall 5.16E-03 6.20E-03 9.54E-03 1.32E-02 2.22E-02

Right colon 2.18E-02 2.51E-02 3.85E-02 5.46E-02 6.89E-02

Rectum 1.26E-02 1.55E-02 2.39E-02 3.25E-02 4.76E-02

Heart Wall 5.90E-03 6.90E-03 1.10E-02 1.54E-02 2.31E-02

Kidneys 1.17E-02 1.34E-02 1.82E-02 2.75E-02 4.19E-02

Liver 4.10E-03 4.65E-03 6.90E-03 9.49E-03 1.53E-02

Lungs 3.85E-03 4.34E-03 6.40E-03 9.72E-03 1.71E-02

Ovaries 7.21E-03 8.03E-03 1.12E-02 1.66E-02 2.81E-02

Pancreas 7.19E-03 8.05E-03 1.14E-02 1.67E-02 2.64E-02

Prostate 5.91E-03 8.05E-03 1.50E-02 1.47E-02 2.56E-02

Salivary Glands 1.35E-02 1.57E-02 2.32E-02 3.08E-02 4.49E-02

Red Marrow 3.92E-03 4.25E-03 5.59E-03 7.62E-03 1.32E-02

Osteogenic Cells 6.71E-03 7.09E-03 8.80E-03 1.11E-02 1.75E-02

Spleen 5.31E-03 5.98E-03 8.71E-03 1.28E-02 2.18E-02

Testes 3.16E-03 3.93E-03 6.24E-03 9.09E-03 1.60E-02

Thymus 3.81E-03 4.39E-03 6.42E-03 9.98E-03 1.76E-02

Thyroid 5.16E-03 7.16E-03 1.08E-02 2.11E-02 3.76E-02

Urinary Bladder Wall 1.61E-02 1.84E-02 2.43E-02 2.71E-02 4.85E-02

Uterus 8.85E-03 1.03E-02 1.61E-02 2.08E-02 3.28E-02

Total Body 4.29E-03 4.63E-03 7.06E-03 1.09E-02 1.89E-02

Effective Dose 7.26E-03 8.44E-03 1.24E-02 1.76E-02 2.69E-02

Radiation Dose Estimates (mSv/MBq) for 99mTc White Blood Cells (WBCs)

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.76E-02 2.11E-02 2.86E-02 3.84E-02 7.03E-02

Brain 2.21E-03 2.81E-03 4.27E-03 6.86E-03 1.24E-02

Esophagus 5.68E-03 7.34E-03 1.07E-02 1.53E-02 2.43E-02

Eyes 2.21E-03 2.81E-03 4.27E-03 6.87E-03 1.25E-02

Gallbladder Wall 1.02E-02 1.23E-02 1.72E-02 2.43E-02 3.43E-02

Left colon 7.42E-03 9.53E-03 1.27E-02 1.71E-02 2.75E-02

Small Intestine 5.25E-03 6.48E-03 9.52E-03 1.35E-02 2.14E-02

Stomach Wall 9.57E-03 1.22E-02 1.79E-02 2.48E-02 3.92E-02

Right colon 5.67E-03 7.09E-03 1.07E-02 1.52E-02 2.31E-02

Rectum 3.99E-03 5.14E-03 7.70E-03 1.05E-02 1.76E-02

Heart Wall 5.64E-03 6.99E-03 1.00E-02 1.41E-02 2.30E-02

Kidneys 1.06E-02 1.29E-02 1.83E-02 2.56E-02 3.89E-02

Liver 1.99E-02 2.58E-02 3.71E-02 5.05E-02 7.97E-02

Lungs 5.05E-03 6.24E-03 8.97E-03 1.26E-02 2.04E-02

Pancreas 8.80E-03 1.06E-02 1.51E-02 2.16E-02 3.45E-02

Prostate 3.23E-03 4.38E-03 6.41E-03 9.00E-03 1.56E-02

Salivary Glands 2.53E-03 3.16E-03 4.82E-03 7.61E-03 1.31E-02

Red Marrow 1.72E-02 1.90E-02 2.94E-02 5.26E-02 1.26E-01

Osteogenic Cells 1.32E-02 1.58E-02 2.34E-02 3.63E-02 7.92E-02

Spleen 1.69E-01 1.93E-01 2.96E-01 4.50E-01 7.40E-01

Testes 1.93E-03 2.47E-03 3.73E-03 5.87E-03 1.02E-02

Thymus 3.54E-03 4.47E-03 6.19E-03 9.65E-03 1.64E-02

Thyroid 2.93E-03 3.70E-03 5.61E-03 8.70E-03 1.48E-02

Urinary Bladder Wall 3.00E-03 4.11E-03 5.97E-03 8.41E-03 1.45E-02

Total Body 4.08E-03 4.99E-03 7.67E-03 1.18E-02 2.02E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.67E-02 3.74E-02 5.14E-02 7.10E-02 1.09E-01

Brain 2.84E-03 2.84E-03 4.27E-03 9.50E-03 1.66E-02

Breasts 2.84E-03 3.00E-03 ----- ----- -----

Esophagus 6.76E-03 7.41E-03 1.10E-02 1.60E-02 2.77E-02

Eyes 2.84E-03 2.84E-03 4.27E-03 6.85E-03 1.24E-02

Gallbladder Wall 9.09E-03 9.81E-03 1.44E-02 1.98E-02 2.84E-02

Left colon 9.69E-03 1.02E-02 1.30E-02 1.78E-02 2.81E-02

Small Intestine 6.79E-03 7.19E-03 1.03E-02 1.48E-02 2.31E-02

Stomach Wall 1.45E-02 1.53E-02 2.15E-02 2.94E-02 4.35E-02

Right colon 6.03E-03 6.41E-03 9.07E-03 1.33E-02 2.03E-02

Rectum 4.90E-03 5.04E-03 7.53E-03 1.02E-02 1.71E-02

Heart Wall 6.12E-03 6.41E-03 9.15E-03 1.31E-02 2.18E-02

Kidneys 1.41E-02 1.48E-02 2.02E-02 2.87E-02 4.30E-02

Liver 2.47E-02 2.60E-02 3.74E-02 5.07E-02 8.06E-02

Lungs 6.09E-03 6.24E-03 8.69E-03 1.23E-02 1.98E-02

Ovaries 5.19E-03 5.41E-03 7.61E-03 1.09E-02 1.74E-02

Pancreas 1.28E-02 1.37E-02 1.90E-02 2.72E-02 3.96E-02

Salivary Glands 2.78E-03 3.18E-03 4.79E-03 7.55E-03 1.30E-02

Red Marrow 2.12E-02 1.96E-02 2.84E-02 5.06E-02 1.21E-01

Osteogenic Cells 1.46E-02 1.56E-02 2.17E-02 3.26E-02 7.04E-02

Spleen 1.92E-01 1.94E-01 2.97E-01 4.51E-01 7.38E-01

Thymus 4.22E-03 4.35E-03 6.17E-03 9.22E-03 1.57E-02

Thyroid 3.16E-03 3.60E-03 5.40E-03 8.40E-03 1.43E-02

Urinary Bladder Wall 3.73E-03 4.15E-03 5.94E-03 8.36E-03 1.44E-02

Uterus 4.55E-03 4.80E-03 6.88E-03 1.00E-02 1.62E-02

Total Body 5.79E-03 5.13E-03 7.65E-03 1.17E-02 2.02E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.72E-02 2.93E-02 4.00E-02 5.47E-02 8.96E-02

Brain 2.52E-03 2.82E-03 4.27E-03 8.18E-03 1.45E-02

Breasts 2.84E-03 3.00E-03 0.00E+00 0.00E+00 0.00E+00

Esophagus 6.22E-03 7.38E-03 1.08E-02 1.57E-02 2.60E-02

Eyes 2.53E-03 2.83E-03 4.27E-03 6.86E-03 1.25E-02

Gallbladder Wall 9.63E-03 1.11E-02 1.58E-02 2.20E-02 3.14E-02

Left colon 8.55E-03 9.84E-03 1.29E-02 1.74E-02 2.78E-02

Small Intestine 6.02E-03 6.83E-03 9.90E-03 1.42E-02 2.22E-02

Stomach Wall 1.20E-02 1.38E-02 1.97E-02 2.71E-02 4.14E-02

Right colon 5.85E-03 6.75E-03 9.89E-03 1.42E-02 2.17E-02

Rectum 4.45E-03 5.09E-03 7.61E-03 1.03E-02 1.74E-02

Heart Wall 5.88E-03 6.70E-03 9.59E-03 1.36E-02 2.24E-02

Kidneys 1.24E-02 1.38E-02 1.92E-02 2.71E-02 4.09E-02

Liver 2.23E-02 2.59E-02 3.73E-02 5.06E-02 8.02E-02

Lungs 5.57E-03 6.24E-03 8.83E-03 1.24E-02 2.01E-02

Ovaries 5.19E-03 5.41E-03 7.61E-03 1.09E-02 1.74E-02

Pancreas 1.08E-02 1.21E-02 1.71E-02 2.44E-02 3.71E-02

Prostate 3.23E-03 4.38E-03 6.41E-03 9.00E-03 1.56E-02

Salivary Glands 2.65E-03 3.17E-03 4.81E-03 7.58E-03 1.31E-02

Red Marrow 1.92E-02 1.93E-02 2.89E-02 5.16E-02 1.24E-01

Osteogenic Cells 1.39E-02 1.57E-02 2.25E-02 3.45E-02 7.48E-02

Spleen 1.81E-01 1.93E-01 2.96E-01 4.51E-01 7.39E-01

Testes 1.93E-03 2.47E-03 3.73E-03 5.87E-03 1.02E-02

Thymus 3.88E-03 4.41E-03 6.18E-03 9.43E-03 1.61E-02

Thyroid 3.04E-03 3.65E-03 5.51E-03 8.55E-03 1.46E-02

Urinary Bladder Wall 3.36E-03 4.13E-03 5.95E-03 8.39E-03 1.44E-02

Uterus 4.55E-03 4.80E-03 6.88E-03 1.00E-02 1.62E-02

Total Body 4.94E-03 5.06E-03 7.66E-03 1.18E-02 2.02E-02

Effective Dose 9.97E-03 1.09E-02 1.57E-02 2.37E-02 4.33E-02

Radiation Dose Estimates (mSv/MBq) for 111In Human Imminuogobulin (HIG)

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.55E-01 1.92E-01 2.73E-01 3.72E-01 6.70E-01

Brain 3.32E-02 4.14E-02 6.82E-02 1.12E-01 1.93E-01

Esophagus 7.15E-02 9.06E-02 1.39E-01 2.09E-01 3.52E-01

Eyes 3.32E-02 4.15E-02 6.83E-02 1.13E-01 1.95E-01

Gallbladder Wall 1.57E-01 1.95E-01 2.73E-01 3.92E-01 5.77E-01

Left colon 6.82E-02 8.80E-02 1.35E-01 1.97E-01 3.42E-01

Small Intestine 6.23E-02 7.85E-02 1.19E-01 1.80E-01 3.06E-01

Stomach Wall 8.38E-02 1.06E-01 1.61E-01 2.37E-01 3.81E-01

Right colon 7.59E-02 9.43E-02 1.42E-01 2.16E-01 3.44E-01

Rectum 5.19E-02 6.34E-02 9.92E-02 1.45E-01 2.58E-01

Heart Wall 7.51E-02 9.58E-02 1.43E-01 2.04E-01 3.54E-01

Kidneys 1.32E-01 1.62E-01 2.24E-01 3.31E-01 5.20E-01

Liver 2.96E-01 3.85E-01 5.51E-01 7.47E-01 1.18E+00

Lungs 6.33E-02 8.08E-02 1.19E-01 1.74E-01 3.01E-01

Pancreas 9.10E-02 1.13E-01 1.66E-01 2.48E-01 4.26E-01

Prostate 5.27E-02 6.89E-02 1.05E-01 1.43E-01 2.46E-01

Salivary Glands 4.03E-02 5.15E-02 8.11E-02 1.32E-01 2.38E-01

Red Marrow 4.88E-02 5.71E-02 7.99E-02 1.13E-01 1.97E-01

Osteogenic Cells 6.83E-02 7.82E-02 1.10E-01 1.58E-01 2.86E-01

Spleen 5.58E-01 6.37E-01 9.64E-01 1.44E+00 2.33E+00

Testes 9.68E-02 1.75E-01 1.04E+00 1.18E+00 1.36E+00

Thymus 5.11E-02 6.50E-02 9.50E-02 1.52E-01 2.69E-01

Thyroid 4.42E-02 5.65E-02 8.87E-02 1.42E-01 2.55E-01

Urinary Bladder Wall 8.24E-02 1.04E-01 1.38E-01 1.78E-01 3.12E-01

Total Body 4.65E-02 5.65E-02 8.77E-02 1.37E-01 2.40E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.50E-01 2.61E-01 3.69E-01 5.23E-01 8.55E-01

Brain 4.12E-02 4.19E-02 6.81E-02 1.20E-01 2.07E-01

Breasts 4.37E-02 4.58E-02 ----- ----- -----

Esophagus 8.48E-02 9.60E-02 1.45E-01 2.22E-01 4.11E-01

Eyes 4.12E-02 4.19E-02 6.82E-02 1.12E-01 1.94E-01

Gallbladder Wall 1.31E-01 1.41E-01 2.10E-01 2.89E-01 4.40E-01

Left colon 8.43E-02 8.63E-02 1.27E-01 1.86E-01 3.24E-01

Small Intestine 7.31E-02 8.24E-02 1.21E-01 1.84E-01 3.17E-01

Stomach Wall 1.11E-01 1.15E-01 1.69E-01 2.47E-01 3.93E-01

Right colon 8.12E-02 8.54E-02 1.28E-01 2.01E-01 3.22E-01

Rectum 6.61E-02 6.84E-02 1.02E-01 1.45E-01 2.58E-01

Heart Wall 7.84E-02 8.12E-02 1.21E-01 1.78E-01 3.15E-01

Kidneys 1.61E-01 1.74E-01 2.34E-01 3.46E-01 5.37E-01

Liver 3.68E-01 3.86E-01 5.57E-01 7.48E-01 1.19E+00

Lungs 7.80E-02 8.11E-02 1.16E-01 1.72E-01 2.93E-01

Ovaries 6.51E-02 6.92E-02 1.01E-01 1.54E-01 2.73E-01

Pancreas 1.37E-01 1.46E-01 2.08E-01 3.11E-01 4.90E-01

Salivary Glands 4.36E-02 5.18E-02 8.08E-02 1.31E-01 2.36E-01

Red Marrow 5.73E-02 5.44E-02 5.94E-02 7.03E-02 1.01E-01

Osteogenic Cells 8.08E-02 7.74E-02 8.13E-02 8.70E-02 1.03E-01

Spleen 6.36E-01 6.42E-01 9.68E-01 1.44E+00 2.33E+00

Thymus 6.26E-02 6.47E-02 9.46E-02 1.46E-01 2.59E-01

Thyroid 4.77E-02 5.61E-02 8.70E-02 1.40E-01 2.50E-01

Urinary Bladder Wall 9.11E-02 9.84E-02 1.30E-01 1.72E-01 2.99E-01

Uterus 6.73E-02 7.37E-02 1.12E-01 1.61E-01 2.76E-01

Total Body 6.50E-02 5.78E-02 8.76E-02 1.36E-01 2.40E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.02E-01 2.26E-01 3.21E-01 4.47E-01 7.63E-01

Brain 3.72E-02 4.16E-02 6.82E-02 1.16E-01 2.00E-01

Breasts 4.37E-02 4.58E-02 ----- ----- -----

Esophagus 7.82E-02 9.33E-02 1.42E-01 2.16E-01 3.82E-01

Eyes 3.72E-02 4.17E-02 6.82E-02 1.12E-01 1.94E-01

Gallbladder Wall 1.44E-01 1.68E-01 2.41E-01 3.40E-01 5.09E-01

Left colon 7.63E-02 8.71E-02 1.31E-01 1.91E-01 3.33E-01

Small Intestine 6.77E-02 8.04E-02 1.20E-01 1.82E-01 3.12E-01

Stomach Wall 9.72E-02 1.11E-01 1.65E-01 2.42E-01 3.87E-01

Right colon 7.85E-02 8.98E-02 1.35E-01 2.08E-01 3.33E-01

Rectum 5.90E-02 6.59E-02 1.01E-01 1.45E-01 2.58E-01

Heart Wall 7.67E-02 8.85E-02 1.32E-01 1.91E-01 3.34E-01

Kidneys 1.46E-01 1.68E-01 2.29E-01 3.38E-01 5.28E-01

Liver 3.32E-01 3.85E-01 5.54E-01 7.48E-01 1.18E+00

Lungs 7.07E-02 8.09E-02 1.18E-01 1.73E-01 2.97E-01

Ovaries 6.51E-02 6.92E-02 1.01E-01 1.54E-01 2.73E-01

Pancreas 1.14E-01 1.29E-01 1.87E-01 2.80E-01 4.58E-01

Prostate 5.27E-02 6.89E-02 1.05E-01 1.43E-01 2.46E-01

Salivary Glands 4.20E-02 5.17E-02 8.09E-02 1.32E-01 2.37E-01

Red Marrow 5.31E-02 5.58E-02 6.96E-02 9.18E-02 1.49E-01

Osteogenic Cells 7.46E-02 7.78E-02 9.57E-02 1.23E-01 1.95E-01

Spleen 5.97E-01 6.39E-01 9.66E-01 1.44E+00 2.33E+00

Testes 9.68E-02 1.75E-01 1.04E+00 1.18E+00 1.36E+00

Thymus 5.69E-02 6.49E-02 9.48E-02 1.49E-01 2.64E-01

Thyroid 4.59E-02 5.63E-02 8.79E-02 1.41E-01 2.53E-01

Urinary Bladder Wall 8.67E-02 1.01E-01 1.34E-01 1.75E-01 3.05E-01

Uterus 6.73E-02 7.37E-02 1.12E-01 1.61E-01 2.76E-01

Total Body 5.58E-02 5.72E-02 8.77E-02 1.36E-01 2.40E-01

Effective Dose 5.84E-02 9.38E-02 1.48E-01 2.06E-01 3.30E-01

Radiation Dose Estimates (mSv/MBq) for 111In Tumor Associated Antibodies - Intact

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adrenals 3.45E-01 4.26E-01 5.99E-01 7.79E-01 1.37E+00

Brain 1.88E-02 2.44E-02 3.61E-02 5.86E-02 1.12E-01

Esophagus 1.12E-01 1.41E-01 2.11E-01 2.93E-01 4.52E-01

Eyes 1.90E-02 2.46E-02 3.64E-02 5.92E-02 1.13E-01

Gallbladder Wall 3.58E-01 4.32E-01 5.83E-01 8.38E-01 1.30E+00

Left colon 8.86E-02 1.26E-01 1.89E-01 2.62E-01 4.29E-01

Small Intestine 7.12E-02 8.92E-02 1.33E-01 1.89E-01 2.92E-01

Stomach Wall 1.26E-01 1.60E-01 2.34E-01 3.41E-01 5.32E-01

Right colon 1.16E-01 1.42E-01 2.21E-01 3.08E-01 4.69E-01

Rectum 4.02E-02 5.13E-02 7.45E-02 1.03E-01 1.66E-01

Heart Wall 1.18E-01 1.49E-01 2.15E-01 3.01E-01 5.02E-01

Kidneys 3.25E-01 3.99E-01 5.47E-01 7.97E-01 1.20E+00

Liver 7.98E-01 1.04E+00 1.48E+00 2.00E+00 3.11E+00

Lungs 9.55E-02 1.19E-01 1.73E-01 2.38E-01 3.82E-01

Pancreas 1.49E-01 1.81E-01 2.62E-01 3.78E-01 6.39E-01

Prostate 3.29E-02 4.21E-02 6.66E-02 9.42E-02 1.56E-01

Salivary Glands 2.16E-02 2.73E-02 4.05E-02 6.40E-02 1.12E-01

Red Marrow 1.77E-01 1.96E-01 2.80E-01 4.65E-01 1.05E+00

Osteogenic Cells 1.34E-01 1.56E-01 2.25E-01 3.42E-01 7.26E-01

Spleen 1.06E+00 1.21E+00 1.83E+00 2.74E+00 4.41E+00

Testes 1.49E-02 1.95E-02 2.98E-02 4.62E-02 8.07E-02

Thymus 5.51E-02 6.98E-02 9.59E-02 1.58E-01 2.74E-01

Thyroid 3.30E-02 4.18E-02 6.28E-02 9.56E-02 1.62E-01

Urinary Bladder Wall 2.71E-02 3.43E-02 5.43E-02 7.67E-02 1.29E-01

Total Body 4.94E-02 6.03E-02 9.39E-02 1.44E-01 2.44E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.26E-01 5.56E-01 7.81E-01 1.08E+00 8.55E-01

Brain 2.57E-02 2.44E-02 3.60E-02 7.57E-02 2.07E-01

Breasts 4.32E-02 4.54E-02 ----- ----- -----

Esophagus 1.45E-01 1.56E-01 2.30E-01 3.35E-01 8.55E-01

Eyes 2.59E-02 2.46E-02 3.61E-02 5.89E-02 2.07E-01

Gallbladder Wall 2.52E-01 2.70E-01 3.89E-01 5.18E-01 4.40E-01

Left colon 1.08E-01 1.14E-01 1.55E-01 2.18E-01 3.24E-01

Small Intestine 9.15E-02 9.81E-02 1.40E-01 2.01E-01 3.17E-01

Stomach Wall 1.63E-01 1.73E-01 2.44E-01 3.51E-01 3.93E-01

Right colon 1.05E-01 1.14E-01 1.81E-01 2.65E-01 3.22E-01

Rectum 4.85E-02 4.91E-02 7.14E-02 9.88E-02 2.58E-01

Heart Wall 9.63E-02 1.02E-01 1.48E-01 2.15E-01 3.15E-01

Kidneys 3.88E-01 4.29E-01 5.68E-01 8.30E-01 5.37E-01

Liver 9.87E-01 1.04E+00 1.49E+00 2.00E+00 1.19E+00

Lungs 1.12E-01 1.19E-01 1.63E-01 2.32E-01 2.93E-01

Ovaries 5.37E-02 5.59E-02 7.96E-02 1.14E-01 2.73E-01

Pancreas 2.53E-01 2.77E-01 3.86E-01 5.68E-01 4.90E-01

Salivary Glands 2.46E-02 2.69E-02 3.97E-02 6.32E-02 2.36E-01

Red Marrow 2.15E-01 1.96E-01 2.65E-01 4.45E-01 1.01E-01

Osteogenic Cells 1.52E-01 1.53E-01 2.12E-01 3.16E-01 1.03E-01

Spleen 1.21E+00 1.23E+00 1.85E+00 2.75E+00 2.33E+00

Thymus 6.37E-02 6.79E-02 9.44E-02 1.43E-01 2.59E-01

Thyroid 3.66E-02 3.96E-02 5.83E-02 8.91E-02 2.50E-01

Urinary Bladder Wall 3.13E-02 3.43E-02 5.30E-02 7.53E-02 2.99E-01

Uterus 4.51E-02 4.76E-02 6.94E-02 1.00E-01 2.76E-01

Total Body 8.62E-02 6.35E-02 9.45E-02 1.43E-01 2.40E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 4.36E-01 4.91E-01 6.90E-01 9.30E-01 1.56E+00

Brain 2.23E-02 2.44E-02 3.60E-02 6.71E-02 1.25E-01

Breasts 4.32E-02 4.54E-02 ----- ----- -----

Esophagus 1.29E-01 1.48E-01 2.21E-01 3.14E-01 5.46E-01

Eyes 2.24E-02 2.46E-02 3.62E-02 5.91E-02 1.12E-01

Gallbladder Wall 3.05E-01 3.51E-01 4.86E-01 6.78E-01 1.09E+00

Left colon 9.83E-02 1.20E-01 1.72E-01 2.40E-01 3.94E-01

Small Intestine 8.13E-02 9.37E-02 1.36E-01 1.95E-01 3.09E-01

Stomach Wall 1.45E-01 1.66E-01 2.39E-01 3.46E-01 5.41E-01

Right colon 1.11E-01 1.28E-01 2.01E-01 2.87E-01 4.39E-01

Rectum 4.44E-02 5.02E-02 7.29E-02 1.01E-01 1.62E-01

Heart Wall 1.07E-01 1.26E-01 1.81E-01 2.58E-01 4.39E-01

Kidneys 3.56E-01 4.14E-01 5.57E-01 8.13E-01 1.22E+00

Liver 8.93E-01 1.04E+00 1.49E+00 2.00E+00 3.13E+00

Lungs 1.04E-01 1.19E-01 1.68E-01 2.35E-01 3.71E-01

Ovaries 5.37E-02 5.59E-02 7.96E-02 1.14E-01 1.78E-01

Pancreas 2.01E-01 2.29E-01 3.24E-01 4.73E-01 7.36E-01

Prostate 3.29E-02 4.21E-02 6.66E-02 9.42E-02 1.56E-01

Salivary Glands 2.31E-02 2.71E-02 4.01E-02 6.36E-02 1.11E-01

Red Marrow 1.96E-01 1.96E-01 2.73E-01 4.55E-01 1.03E+00

Osteogenic Cells 1.43E-01 1.55E-01 2.18E-01 3.29E-01 6.96E-01

Spleen 1.14E+00 1.22E+00 1.84E+00 2.74E+00 4.41E+00

Testes 1.49E-02 1.95E-02 2.98E-02 4.62E-02 8.07E-02

Thymus 5.94E-02 6.89E-02 9.51E-02 1.51E-01 2.59E-01

Thyroid 3.48E-02 4.07E-02 6.05E-02 9.24E-02 1.57E-01

Urinary Bladder Wall 2.92E-02 3.43E-02 5.36E-02 7.60E-02 1.28E-01

Uterus 4.51E-02 4.76E-02 6.94E-02 1.00E-01 1.57E-01

Total Body 6.78E-02 6.19E-02 9.42E-02 1.43E-01 2.45E-01

Effective Dose 1.46E-01 1.63E-01 2.30E-01 3.33E-01 5.70E-01

Radiation Dose Estimates (mSv/MBq) for 111In Tumor Associated Antibodies – Fab2

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adrenals 1.60E-01 4.26E-01 5.99E-01 7.79E-01 1.37E+00

Brain 8.45E-03 2.44E-02 3.61E-02 5.86E-02 1.12E-01

Esophagus 3.24E-02 1.41E-01 2.11E-01 2.93E-01 4.52E-01

Eyes 8.48E-03 2.46E-02 3.64E-02 5.92E-02 1.13E-01

Gallbladder Wall 8.97E-02 4.32E-01 5.83E-01 8.38E-01 1.30E+00

Left colon 3.76E-02 1.26E-01 1.89E-01 2.62E-01 4.29E-01

Small Intestine 2.86E-02 8.92E-02 1.33E-01 1.89E-01 2.92E-01

Stomach Wall 3.93E-02 1.60E-01 2.34E-01 3.41E-01 5.32E-01

Right colon 3.88E-02 1.42E-01 2.21E-01 3.08E-01 4.69E-01

Rectum 1.70E-02 5.13E-02 7.45E-02 1.03E-01 1.66E-01

Heart Wall 3.27E-02 1.49E-01 2.15E-01 3.01E-01 5.02E-01

Kidneys 4.42E-01 3.99E-01 5.47E-01 7.97E-01 1.20E+00

Liver 1.82E-01 1.04E+00 1.48E+00 2.00E+00 3.11E+00

Lungs 2.71E-02 1.19E-01 1.73E-01 2.38E-01 3.82E-01

Pancreas 4.71E-02 1.81E-01 2.62E-01 3.78E-01 6.39E-01

Prostate 1.67E-02 4.21E-02 6.66E-02 9.42E-02 1.56E-01

Salivary Glands 1.01E-02 2.73E-02 4.05E-02 6.40E-02 1.12E-01

Red Marrow 4.20E-02 1.96E-01 2.80E-01 4.65E-01 1.05E+00

Osteogenic Cells 3.83E-02 1.56E-01 2.25E-01 3.42E-01 7.26E-01

Spleen 2.80E-01 1.21E+00 1.83E+00 2.74E+00 4.41E+00

Testes 8.37E-03 1.95E-02 2.98E-02 4.62E-02 8.07E-02

Thymus 1.77E-02 6.98E-02 9.59E-02 1.58E-01 2.74E-01

Thyroid 1.28E-02 4.18E-02 6.28E-02 9.56E-02 1.62E-01

Urinary Bladder Wall 1.33E-02 3.43E-02 5.43E-02 7.67E-02 1.29E-01

Total Body 1.86E-02 6.03E-02 9.39E-02 1.44E-01 2.44E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.26E-01 5.56E-01 7.81E-01 1.08E+00 1.74E+00

Brain 2.57E-02 2.44E-02 3.60E-02 7.57E-02 1.38E-01

Breasts 4.32E-02 4.54E-02 ----- ----- -----

Esophagus 1.45E-01 1.56E-01 2.30E-01 3.35E-01 6.39E-01

Eyes 2.59E-02 2.46E-02 3.61E-02 5.89E-02 1.12E-01

Gallbladder Wall 2.52E-01 2.70E-01 3.89E-01 5.18E-01 8.76E-01

Left colon 1.08E-01 1.14E-01 1.55E-01 2.18E-01 3.59E-01

Small Intestine 9.15E-02 9.81E-02 1.40E-01 2.01E-01 3.26E-01

Stomach Wall 1.63E-01 1.73E-01 2.44E-01 3.51E-01 5.51E-01

Right colon 1.05E-01 1.14E-01 1.81E-01 2.65E-01 4.10E-01

Rectum 4.85E-02 4.91E-02 7.14E-02 9.88E-02 1.59E-01

Heart Wall 9.63E-02 1.02E-01 1.48E-01 2.15E-01 3.77E-01

Kidneys 3.88E-01 4.29E-01 5.68E-01 8.30E-01 1.24E+00

Liver 9.87E-01 1.04E+00 1.49E+00 2.00E+00 3.14E+00

Lungs 1.12E-01 1.19E-01 1.63E-01 2.32E-01 3.60E-01

Ovaries 5.37E-02 5.59E-02 7.96E-02 1.14E-01 1.78E-01

Pancreas 2.53E-01 2.77E-01 3.86E-01 5.68E-01 8.33E-01

Salivary Glands 2.46E-02 2.69E-02 3.97E-02 6.32E-02 1.10E-01

Red Marrow 2.15E-01 1.96E-01 2.65E-01 4.45E-01 1.01E+00

Osteogenic Cells 1.52E-01 1.53E-01 2.12E-01 3.16E-01 6.66E-01

Spleen 1.21E+00 1.23E+00 1.85E+00 2.75E+00 4.42E+00

Thymus 6.37E-02 6.79E-02 9.44E-02 1.43E-01 2.44E-01

Thyroid 3.66E-02 3.96E-02 5.83E-02 8.91E-02 1.52E-01

Urinary Bladder Wall 3.13E-02 3.43E-02 5.30E-02 7.53E-02 1.27E-01

Uterus 4.51E-02 4.76E-02 6.94E-02 1.00E-01 1.57E-01

Total Body 8.62E-02 6.35E-02 9.45E-02 1.43E-01 2.47E-01

Gender Average

Adrenals 3.43E-01 4.91E-01 6.90E-01 9.30E-01 1.56E+00

Brain 1.71E-02 2.44E-02 3.60E-02 6.71E-02 1.25E-01

Breasts 4.32E-02 4.54E-02 ----- ----- -----

Esophagus 8.87E-02 1.48E-01 2.21E-01 3.14E-01 5.46E-01

Eyes 1.72E-02 2.46E-02 3.62E-02 5.91E-02 1.12E-01

Gallbladder Wall 1.71E-01 3.51E-01 4.86E-01 6.78E-01 1.09E+00

Left colon 7.28E-02 1.20E-01 1.72E-01 2.40E-01 3.94E-01

Small Intestine 6.00E-02 9.37E-02 1.36E-01 1.95E-01 3.09E-01

Stomach Wall 1.01E-01 1.66E-01 2.39E-01 3.46E-01 5.41E-01

Right colon 7.20E-02 1.28E-01 2.01E-01 2.87E-01 4.39E-01

Rectum 3.28E-02 5.02E-02 7.29E-02 1.01E-01 1.62E-01

Heart Wall 6.45E-02 1.26E-01 1.81E-01 2.58E-01 4.39E-01

Kidneys 4.15E-01 4.14E-01 5.57E-01 8.13E-01 1.22E+00

Liver 5.84E-01 1.04E+00 1.49E+00 2.00E+00 3.13E+00

Lungs 6.95E-02 1.19E-01 1.68E-01 2.35E-01 3.71E-01

Ovaries 5.37E-02 5.59E-02 7.96E-02 1.14E-01 1.78E-01

Pancreas 1.50E-01 2.29E-01 3.24E-01 4.73E-01 7.36E-01

Prostate 1.67E-02 4.21E-02 6.66E-02 9.42E-02 1.56E-01

Salivary Glands 1.73E-02 2.71E-02 4.01E-02 6.36E-02 1.11E-01

Red Marrow 1.28E-01 1.96E-01 2.73E-01 4.55E-01 1.03E+00

Osteogenic Cells 9.53E-02 1.55E-01 2.18E-01 3.29E-01 6.96E-01

Spleen 7.45E-01 1.22E+00 1.84E+00 2.74E+00 4.41E+00

Testes 8.37E-03 1.95E-02 2.98E-02 4.62E-02 8.07E-02

Thymus 4.07E-02 6.89E-02 9.51E-02 1.51E-01 2.59E-01

Thyroid 2.47E-02 4.07E-02 6.05E-02 9.24E-02 1.57E-01

Urinary Bladder Wall 2.23E-02 3.43E-02 5.36E-02 7.60E-02 1.28E-01

Uterus 4.51E-02 4.76E-02 6.94E-02 1.00E-01 1.57E-01

Total Body 5.24E-02 6.19E-02 9.42E-02 1.43E-01 2.45E-01

Effective Dose 1.01E-01 1.63E-01 2.30E-01 3.33E-01 5.70E-01

Radiation Dose Estimates (mSv/MBq) for 111In Tumor Associated Antibodies – Fab

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adrenals 1.15E-01 4.26E-01 5.99E-01 7.79E-01 1.37E+00

Brain 5.22E-03 2.44E-02 3.61E-02 5.86E-02 1.12E-01

Esophagus 1.35E-02 1.41E-01 2.11E-01 2.93E-01 4.52E-01

Eyes 5.24E-03 2.46E-02 3.64E-02 5.92E-02 1.13E-01

Gallbladder Wall 3.01E-02 4.32E-01 5.83E-01 8.38E-01 1.30E+00

Left colon 2.46E-02 1.26E-01 1.89E-01 2.62E-01 4.29E-01

Small Intestine 1.78E-02 8.92E-02 1.33E-01 1.89E-01 2.92E-01

Stomach Wall 1.80E-02 1.60E-01 2.34E-01 3.41E-01 5.32E-01

Right colon 2.04E-02 1.42E-01 2.21E-01 3.08E-01 4.69E-01

Rectum 1.08E-02 5.13E-02 7.45E-02 1.03E-01 1.66E-01

Heart Wall 1.28E-02 1.49E-01 2.15E-01 3.01E-01 5.02E-01

Kidneys 4.57E-01 3.99E-01 5.47E-01 7.97E-01 1.20E+00

Liver 4.74E-02 1.04E+00 1.48E+00 2.00E+00 3.11E+00

Lungs 1.10E-02 1.19E-01 1.73E-01 2.38E-01 3.82E-01

Pancreas 2.30E-02 1.81E-01 2.62E-01 3.78E-01 6.39E-01

Prostate 1.16E-02 4.21E-02 6.66E-02 9.42E-02 1.56E-01

Salivary Glands 6.32E-03 2.73E-02 4.05E-02 6.40E-02 1.12E-01

Red Marrow 1.46E-02 1.96E-01 2.80E-01 4.65E-01 1.05E+00

Osteogenic Cells 1.75E-02 1.56E-01 2.25E-01 3.42E-01 7.26E-01

Spleen 7.94E-02 1.21E+00 1.83E+00 2.74E+00 4.41E+00

Testes 5.75E-03 1.95E-02 2.98E-02 4.62E-02 8.07E-02

Thymus 8.36E-03 6.98E-02 9.59E-02 1.58E-01 2.74E-01

Thyroid 7.13E-03 4.18E-02 6.28E-02 9.56E-02 1.62E-01

Urinary Bladder Wall 8.82E-03 3.43E-02 5.43E-02 7.67E-02 1.29E-01

Total Body 1.86E-02 6.03E-02 9.39E-02 1.44E-01 2.44E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.26E-01 5.56E-01 7.81E-01 1.08E+00 1.74E+00

Brain 2.57E-02 2.44E-02 3.60E-02 7.57E-02 1.38E-01

Breasts 4.32E-02 4.54E-02 ----- ----- -----

Esophagus 1.45E-01 1.56E-01 2.30E-01 3.35E-01 6.39E-01

Eyes 2.59E-02 2.46E-02 3.61E-02 5.89E-02 1.12E-01

Gallbladder Wall 2.52E-01 2.70E-01 3.89E-01 5.18E-01 8.76E-01

Left colon 1.08E-01 1.14E-01 1.55E-01 2.18E-01 3.59E-01

Small Intestine 9.15E-02 9.81E-02 1.40E-01 2.01E-01 3.26E-01

Stomach Wall 1.63E-01 1.73E-01 2.44E-01 3.51E-01 5.51E-01

Right colon 1.05E-01 1.14E-01 1.81E-01 2.65E-01 4.10E-01

Rectum 4.85E-02 4.91E-02 7.14E-02 9.88E-02 1.59E-01

Heart Wall 9.63E-02 1.02E-01 1.48E-01 2.15E-01 3.77E-01

Kidneys 3.88E-01 4.29E-01 5.68E-01 8.30E-01 1.24E+00

Liver 9.87E-01 1.04E+00 1.49E+00 2.00E+00 3.14E+00

Lungs 1.12E-01 1.19E-01 1.63E-01 2.32E-01 3.60E-01

Ovaries 5.37E-02 5.59E-02 7.96E-02 1.14E-01 1.78E-01

Pancreas 2.53E-01 2.77E-01 3.86E-01 5.68E-01 8.33E-01

Salivary Glands 2.46E-02 2.69E-02 3.97E-02 6.32E-02 1.10E-01

Red Marrow 2.15E-01 1.96E-01 2.65E-01 4.45E-01 1.01E+00

Osteogenic Cells 1.52E-01 1.53E-01 2.12E-01 3.16E-01 6.66E-01

Spleen 1.21E+00 1.23E+00 1.85E+00 2.75E+00 4.42E+00

Thymus 6.37E-02 6.79E-02 9.44E-02 1.43E-01 2.44E-01

Thyroid 3.66E-02 3.96E-02 5.83E-02 8.91E-02 1.52E-01

Urinary Bladder Wall 3.13E-02 3.43E-02 5.30E-02 7.53E-02 1.27E-01

Uterus 4.51E-02 4.76E-02 6.94E-02 1.00E-01 1.57E-01

Total Body 8.62E-02 6.35E-02 9.45E-02 1.43E-01 2.47E-01

Gender Average

Adrenals 3.21E-01 4.91E-01 6.90E-01 9.30E-01 1.56E+00

Brain 1.54E-02 2.44E-02 3.60E-02 6.71E-02 1.25E-01

Breasts 4.32E-02 4.54E-02 ----- ----- -----

Esophagus 7.93E-02 1.48E-01 2.21E-01 3.14E-01 5.46E-01

Eyes 1.56E-02 2.46E-02 3.62E-02 5.91E-02 1.12E-01

Gallbladder Wall 1.41E-01 3.51E-01 4.86E-01 6.78E-01 1.09E+00

Left colon 6.63E-02 1.20E-01 1.72E-01 2.40E-01 3.94E-01

Small Intestine 5.46E-02 9.37E-02 1.36E-01 1.95E-01 3.09E-01

Stomach Wall 9.04E-02 1.66E-01 2.39E-01 3.46E-01 5.41E-01

Right colon 6.28E-02 1.28E-01 2.01E-01 2.87E-01 4.39E-01

Rectum 2.96E-02 5.02E-02 7.29E-02 1.01E-01 1.62E-01

Heart Wall 5.46E-02 1.26E-01 1.81E-01 2.58E-01 4.39E-01

Kidneys 4.23E-01 4.14E-01 5.57E-01 8.13E-01 1.22E+00

Liver 5.17E-01 1.04E+00 1.49E+00 2.00E+00 3.13E+00

Lungs 6.14E-02 1.19E-01 1.68E-01 2.35E-01 3.71E-01

Ovaries 5.37E-02 5.59E-02 7.96E-02 1.14E-01 1.78E-01

Pancreas 1.38E-01 2.29E-01 3.24E-01 4.73E-01 7.36E-01

Prostate 1.16E-02 4.21E-02 6.66E-02 9.42E-02 1.56E-01

Salivary Glands 1.55E-02 2.71E-02 4.01E-02 6.36E-02 1.11E-01

Red Marrow 1.15E-01 1.96E-01 2.73E-01 4.55E-01 1.03E+00

Osteogenic Cells 8.49E-02 1.55E-01 2.18E-01 3.29E-01 6.96E-01

Spleen 6.45E-01 1.22E+00 1.84E+00 2.74E+00 4.41E+00

Testes 5.75E-03 1.95E-02 2.98E-02 4.62E-02 8.07E-02

Thymus 3.61E-02 6.89E-02 9.51E-02 1.51E-01 2.59E-01

Thyroid 2.19E-02 4.07E-02 6.05E-02 9.24E-02 1.57E-01

Urinary Bladder Wall 2.01E-02 3.43E-02 5.36E-02 7.60E-02 1.28E-01

Uterus 4.51E-02 4.76E-02 6.94E-02 1.00E-01 1.57E-01

Total Body 4.85E-02 6.19E-02 9.42E-02 1.43E-01 2.45E-01

Effective Dose 9.05E-02 1.63E-01 2.30E-01 3.33E-01 5.70E-01

Radiation Dose Estimates (mSv/MBq) for 111In Octreotide

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.62E-01 2.05E-01 2.91E-01 4.04E-01 6.76E-01

Brain 9.66E-03 1.21E-02 2.00E-02 3.28E-02 5.68E-02

Esophagus 3.14E-02 4.05E-02 6.22E-02 8.91E-02 1.45E-01

Eyes 9.66E-03 1.21E-02 2.00E-02 3.30E-02 5.73E-02

Gallbladder Wall 6.39E-02 7.97E-02 1.11E-01 1.61E-01 2.45E-01

Left colon 4.38E-02 5.42E-02 7.13E-02 1.02E-01 1.66E-01

Small Intestine 3.29E-02 4.12E-02 6.18E-02 8.85E-02 1.45E-01

Stomach Wall 4.94E-02 6.32E-02 9.52E-02 1.38E-01 2.21E-01

Right colon 3.55E-02 4.46E-02 7.03E-02 1.03E-01 1.65E-01

Rectum 3.39E-02 4.37E-02 6.54E-02 7.93E-02 1.35E-01

Heart Wall 2.87E-02 3.68E-02 5.51E-02 7.87E-02 1.35E-01

Kidneys 4.29E-01 5.15E-01 6.86E-01 1.05E+00 1.56E+00

Liver 1.17E-01 1.52E-01 2.17E-01 2.96E-01 4.66E-01

Lungs 2.52E-02 3.20E-02 4.74E-02 6.82E-02 1.15E-01

Pancreas 4.80E-02 5.92E-02 8.75E-02 1.29E-01 2.08E-01

Prostate 4.14E-02 5.32E-02 1.26E-01 8.60E-02 1.39E-01

Salivary Glands 1.20E-02 1.53E-02 2.43E-02 3.96E-02 7.17E-02

Red Marrow 2.35E-02 2.69E-02 3.71E-02 4.01E-02 6.35E-02

Osteogenic Cells 3.04E-02 3.19E-02 4.40E-02 5.31E-02 8.91E-02

Spleen 6.66E-01 7.58E-01 1.15E+00 1.71E+00 2.76E+00

Testes 1.56E-02 1.97E-02 3.54E-02 3.91E-02 6.83E-02

Thymus 1.78E-02 2.31E-02 3.32E-02 5.48E-02 9.88E-02

Thyroid 7.90E-02 1.22E-01 1.79E-01 3.78E-01 6.55E-01

Urinary Bladder Wall 2.24E-01 2.68E-01 3.36E-01 3.28E-01 5.73E-01

Total Body 2.13E-02 2.58E-02 3.96E-02 5.96E-02 1.02E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.46E-01 2.57E-01 3.60E-01 5.15E-01 8.07E-01

Brain 1.20E-02 1.22E-02 1.99E-02 4.34E-02 7.34E-02

Breasts 1.47E-02 1.58E-02 ----- ----- -----

Esophagus 3.78E-02 4.22E-02 6.37E-02 9.37E-02 1.66E-01

Eyes 1.20E-02 1.23E-02 1.99E-02 3.28E-02 5.69E-02

Gallbladder Wall 7.85E-02 8.52E-02 1.23E-01 1.72E-01 2.67E-01

Left colon 5.29E-02 5.69E-02 7.34E-02 1.05E-01 1.78E-01

Small Intestine 4.30E-02 4.69E-02 6.75E-02 9.79E-02 1.61E-01

Stomach Wall 7.66E-02 8.06E-02 1.16E-01 1.65E-01 2.49E-01

Right colon 3.77E-02 4.09E-02 6.35E-02 9.76E-02 1.60E-01

Rectum 6.01E-02 7.87E-02 9.36E-02 1.00E-01 1.65E-01

Heart Wall 3.09E-02 3.25E-02 4.82E-02 7.08E-02 1.22E-01

Kidneys 4.82E-01 5.39E-01 6.92E-01 1.06E+00 1.57E+00

Liver 1.45E-01 1.54E-01 2.21E-01 2.98E-01 4.73E-01

Lungs 3.04E-02 3.19E-02 4.56E-02 6.68E-02 1.10E-01

Ovaries 3.81E-02 4.72E-02 5.84E-02 8.08E-02 1.44E-01

Pancreas 7.71E-02 8.41E-02 1.19E-01 1.77E-01 2.63E-01

Salivary Glands 1.30E-02 1.54E-02 2.41E-02 3.94E-02 7.08E-02

Red Marrow 2.77E-02 2.44E-02 2.49E-02 2.69E-02 3.52E-02

Osteogenic Cells 3.43E-02 2.99E-02 3.05E-02 3.13E-02 3.53E-02

Spleen 7.63E-01 7.72E-01 1.16E+00 1.73E+00 2.78E+00

Thymus 2.15E-02 2.31E-02 3.42E-02 5.39E-02 9.44E-02

Thyroid 9.00E-02 1.22E-01 1.79E-01 3.73E-01 6.62E-01

Urinary Bladder Wall 2.25E-01 2.31E-01 2.80E-01 2.82E-01 4.87E-01

Uterus 6.10E-02 7.90E-02 1.15E-01 1.24E-01 1.95E-01

Total Body 3.23E-02 2.63E-02 3.89E-02 5.82E-02 1.01E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.04E-01 2.31E-01 3.25E-01 4.60E-01 7.42E-01

Brain 1.08E-02 1.21E-02 1.99E-02 3.81E-02 6.51E-02

Breasts 1.47E-02 1.58E-02 ----- ----- -----

Esophagus 3.46E-02 4.13E-02 6.30E-02 9.14E-02 1.56E-01

Eyes 1.08E-02 1.22E-02 2.00E-02 3.29E-02 5.71E-02

Gallbladder Wall 7.12E-02 8.25E-02 1.17E-01 1.66E-01 2.56E-01

Left colon 4.83E-02 5.56E-02 7.24E-02 1.03E-01 1.72E-01

Small Intestine 3.79E-02 4.41E-02 6.47E-02 9.32E-02 1.53E-01

Stomach Wall 6.30E-02 7.19E-02 1.05E-01 1.52E-01 2.35E-01

Right colon 3.66E-02 4.28E-02 6.69E-02 1.00E-01 1.62E-01

Rectum 4.70E-02 6.12E-02 7.95E-02 8.99E-02 1.50E-01

Heart Wall 2.98E-02 3.46E-02 5.17E-02 7.47E-02 1.29E-01

Kidneys 4.55E-01 5.27E-01 6.89E-01 1.06E+00 1.56E+00

Liver 1.31E-01 1.53E-01 2.19E-01 2.97E-01 4.69E-01

Lungs 2.78E-02 3.19E-02 4.65E-02 6.75E-02 1.13E-01

Ovaries 3.81E-02 4.72E-02 5.84E-02 8.08E-02 1.44E-01

Pancreas 6.25E-02 7.17E-02 1.03E-01 1.53E-01 2.35E-01

Prostate 4.14E-02 5.32E-02 1.26E-01 8.60E-02 1.39E-01

Salivary Glands 1.25E-02 1.54E-02 2.42E-02 3.95E-02 7.12E-02

Red Marrow 2.56E-02 2.56E-02 3.10E-02 3.35E-02 4.93E-02

Osteogenic Cells 3.24E-02 3.09E-02 3.73E-02 4.22E-02 6.22E-02

Spleen 7.14E-01 7.65E-01 1.15E+00 1.72E+00 2.77E+00

Testes 1.56E-02 1.97E-02 3.54E-02 3.91E-02 6.83E-02

Thymus 1.96E-02 2.31E-02 3.37E-02 5.44E-02 9.66E-02

Thyroid 8.45E-02 1.22E-01 1.79E-01 3.75E-01 6.59E-01

Urinary Bladder Wall 2.25E-01 2.49E-01 3.08E-01 3.05E-01 5.30E-01

Uterus 6.10E-02 7.90E-02 1.15E-01 1.24E-01 1.95E-01

Total Body 2.68E-02 2.60E-02 3.93E-02 5.89E-02 1.01E-01

Effective Dose 5.84E-02 6.71E-02 9.23E-02 1.30E-01 2.12E-01

Radiation Dose Estimates (mSv/MBq) for 111In WBCs

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.00E-01 8.41E-01 1.18E+00 1.60E+00 3.16E+00

Brain 6.28E-02 8.07E-02 1.19E-01 1.93E-01 3.65E-01

Esophagus 1.95E-01 2.47E-01 3.67E-01 5.11E-01 8.06E-01

Eyes 6.27E-02 8.07E-02 1.19E-01 1.93E-01 3.67E-01

Gallbladder Wall 3.81E-01 4.55E-01 6.40E-01 9.14E-01 1.38E+00

Left colon 2.57E-01 3.28E-01 4.31E-01 5.86E-01 9.23E-01

Small Intestine 1.68E-01 2.08E-01 3.05E-01 4.28E-01 6.73E-01

Stomach Wall 3.52E-01 4.49E-01 6.65E-01 9.63E-01 1.54E+00

Right colon 1.87E-01 2.27E-01 3.50E-01 4.94E-01 7.54E-01

Rectum 1.24E-01 1.57E-01 2.26E-01 3.09E-01 4.92E-01

Heart Wall 1.89E-01 2.34E-01 3.38E-01 4.71E-01 7.91E-01

Kidneys 4.03E-01 4.95E-01 7.14E-01 1.01E+00 1.57E+00

Liver 7.44E-01 9.62E-01 1.37E+00 1.86E+00 2.91E+00

Lungs 1.72E-01 2.12E-01 3.07E-01 4.25E-01 6.96E-01

Pancreas 3.06E-01 3.68E-01 5.33E-01 7.68E-01 1.23E+00

Prostate 9.27E-02 1.17E-01 1.86E-01 2.60E-01 4.21E-01

Salivary Glands 6.97E-02 8.63E-02 1.27E-01 1.99E-01 3.48E-01

Red Marrow 5.30E-01 5.87E-01 8.62E-01 1.48E+00 3.39E+00

Osteogenic Cells 3.94E-01 4.76E-01 7.04E-01 1.10E+00 2.40E+00

Spleen 6.28E+00 7.11E+00 1.08E+01 1.61E+01 2.60E+01

Testes 5.00E-02 6.49E-02 9.77E-02 1.51E-01 2.61E-01

Thymus 1.11E-01 1.37E-01 1.88E-01 2.97E-01 5.12E-01

Thyroid 8.57E-02 1.06E-01 1.58E-01 2.43E-01 4.16E-01

Urinary Bladder Wall 8.33E-02 1.04E-01 1.63E-01 2.27E-01 3.81E-01

Total Body 1.27E-01 1.54E-01 2.37E-01 3.64E-01 6.22E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.70E+00 1.73E+00 2.39E+00 3.42E+00 5.35E+00

Brain 8.54E-02 8.10E-02 1.19E-01 2.98E-01 5.31E-01

Breasts 8.85E-02 9.23E-02 ----- ----- -----

Esophagus 2.36E-01 2.54E-01 3.74E-01 5.45E-01 9.86E-01

Eyes 8.56E-02 8.11E-02 1.18E-01 1.92E-01 3.66E-01

Gallbladder Wall 3.07E-01 3.30E-01 4.91E-01 6.64E-01 1.05E+00

Left colon 3.50E-01 3.66E-01 4.52E-01 6.26E-01 9.81E-01

Small Intestine 2.21E-01 2.34E-01 3.34E-01 4.77E-01 7.52E-01

Stomach Wall 5.67E-01 5.97E-01 8.41E-01 1.19E+00 1.76E+00

Right colon 1.93E-01 2.03E-01 2.90E-01 4.20E-01 6.47E-01

Rectum 1.52E-01 1.53E-01 2.18E-01 2.98E-01 4.74E-01

Heart Wall 1.97E-01 2.08E-01 2.97E-01 4.25E-01 7.25E-01

Kidneys 5.58E-01 5.82E-01 8.05E-01 1.17E+00 1.79E+00

Liver 9.19E-01 9.69E-01 1.39E+00 1.87E+00 2.95E+00

Lungs 2.03E-01 2.12E-01 2.95E-01 4.17E-01 6.73E-01

Ovaries 1.59E-01 1.64E-01 2.28E-01 3.25E-01 5.03E-01

Pancreas 4.63E-01 5.00E-01 6.99E-01 1.02E+00 1.52E+00

Salivary Glands 7.83E-02 8.63E-02 1.25E-01 1.98E-01 3.43E-01

Red Marrow 6.43E-01 5.98E-01 8.30E-01 1.42E+00 3.28E+00

Osteogenic Cells 4.40E-01 4.67E-01 6.65E-01 1.02E+00 2.19E+00

Spleen 7.09E+00 7.16E+00 1.08E+01 1.61E+01 2.58E+01

Thymus 1.30E-01 1.33E-01 1.87E-01 2.79E-01 4.77E-01

Thyroid 9.26E-02 1.02E-01 1.49E-01 2.31E-01 3.99E-01

Urinary Bladder Wall 9.69E-02 1.05E-01 1.62E-01 2.26E-01 3.78E-01

Uterus 1.34E-01 1.41E-01 2.00E-01 2.86E-01 4.47E-01

Total Body 1.91E-01 1.58E-01 2.36E-01 3.60E-01 6.21E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.20E+00 1.29E+00 1.79E+00 2.51E+00 4.26E+00

Brain 7.41E-02 8.08E-02 1.19E-01 2.45E-01 4.48E-01

Breasts 8.85E-02 9.23E-02 ----- ----- -----

Esophagus 2.15E-01 2.51E-01 3.70E-01 5.28E-01 8.96E-01

Eyes 7.42E-02 8.09E-02 1.19E-01 1.93E-01 3.66E-01

Gallbladder Wall 3.44E-01 3.93E-01 5.66E-01 7.89E-01 1.21E+00

Left colon 3.04E-01 3.47E-01 4.41E-01 6.06E-01 9.52E-01

Small Intestine 1.95E-01 2.21E-01 3.19E-01 4.52E-01 7.12E-01

Stomach Wall 4.59E-01 5.23E-01 7.53E-01 1.08E+00 1.65E+00

Right colon 1.90E-01 2.15E-01 3.20E-01 4.57E-01 7.01E-01

Rectum 1.38E-01 1.55E-01 2.22E-01 3.04E-01 4.83E-01

Heart Wall 1.93E-01 2.21E-01 3.18E-01 4.48E-01 7.58E-01

Kidneys 4.81E-01 5.39E-01 7.60E-01 1.09E+00 1.68E+00

Liver 8.32E-01 9.65E-01 1.38E+00 1.87E+00 2.93E+00

Lungs 1.88E-01 2.12E-01 3.01E-01 4.21E-01 6.85E-01

Ovaries 1.59E-01 1.64E-01 2.28E-01 3.25E-01 5.03E-01

Pancreas 3.85E-01 4.34E-01 6.16E-01 8.96E-01 1.37E+00

Prostate 9.27E-02 1.17E-01 1.86E-01 2.60E-01 4.21E-01

Salivary Glands 7.40E-02 8.63E-02 1.26E-01 1.99E-01 3.46E-01

Red Marrow 5.86E-01 5.92E-01 8.46E-01 1.45E+00 3.33E+00

Osteogenic Cells 4.17E-01 4.72E-01 6.85E-01 1.06E+00 2.29E+00

Spleen 6.69E+00 7.14E+00 1.08E+01 1.61E+01 2.59E+01

Testes 5.00E-02 6.49E-02 9.77E-02 1.51E-01 2.61E-01

Thymus 1.20E-01 1.35E-01 1.88E-01 2.88E-01 4.94E-01

Thyroid 8.92E-02 1.04E-01 1.53E-01 2.37E-01 4.07E-01

Urinary Bladder Wall 9.01E-02 1.05E-01 1.62E-01 2.26E-01 3.79E-01

Uterus 1.34E-01 1.41E-01 2.00E-01 2.86E-01 4.47E-01

Total Body 1.59E-01 1.56E-01 2.37E-01 3.62E-01 6.22E-01

Effective Dose 3.45E-01 3.78E-01 5.36E-01 7.99E-01 1.41E+00

Radiation Dose Estimates (mSv/MBq) for 123I BMIPP

Biokinetic data: ICRP 106 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.86E-02 2.36E-02 3.50E-02 5.17E-02 9.22E-02

Brain 9.89E-03 1.24E-02 2.07E-02 3.38E-02 5.99E-02

Esophagus 1.57E-02 2.03E-02 3.22E-02 5.10E-02 9.21E-02

Eyes 9.90E-03 1.25E-02 2.07E-02 3.40E-02 6.05E-02

Gallbladder Wall 2.25E-02 2.87E-02 4.25E-02 6.30E-02 9.28E-02

Left colon 1.41E-02 1.79E-02 2.87E-02 4.34E-02 7.94E-02

Small Intestine 1.45E-02 1.82E-02 2.85E-02 4.44E-02 7.80E-02

Stomach Wall 1.54E-02 2.01E-02 3.13E-02 4.70E-02 8.08E-02

Right colon 1.51E-02 1.94E-02 2.95E-02 4.64E-02 7.82E-02

Rectum 1.48E-02 1.84E-02 2.97E-02 4.42E-02 7.72E-02

Heart Wall 5.15E-02 6.91E-02 1.09E-01 1.71E-01 2.93E-01

Kidneys 1.43E-02 1.82E-02 2.81E-02 4.32E-02 7.62E-02

Liver 3.87E-02 5.09E-02 7.47E-02 1.03E-01 1.69E-01

Lungs 1.46E-02 1.88E-02 2.87E-02 4.38E-02 7.83E-02

Pancreas 1.68E-02 2.12E-02 3.25E-02 5.03E-02 9.08E-02

Prostate 1.52E-02 2.02E-02 3.67E-02 4.35E-02 7.65E-02

Salivary Glands 1.13E-02 1.44E-02 2.35E-02 3.83E-02 6.96E-02

Red Marrow 1.08E-02 1.31E-02 2.01E-02 3.09E-02 5.85E-02

Osteogenic Cells 1.95E-02 2.37E-02 3.60E-02 5.47E-02 1.04E-01

Spleen 1.27E-02 1.61E-02 2.55E-02 3.91E-02 7.08E-02

Testes 1.05E-02 1.31E-02 2.08E-02 3.17E-02 5.72E-02

Thymus 1.55E-02 2.00E-02 2.91E-02 4.64E-02 8.15E-02

Thyroid 1.19E-02 1.52E-02 2.46E-02 3.97E-02 7.20E-02

Urinary Bladder Wall 4.39E-02 5.49E-02 8.06E-02 1.08E-01 1.52E-01

Total Body 1.20E-02 1.48E-02 2.36E-02 3.74E-02 6.71E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.25E-02 2.38E-02 3.56E-02 5.21E-02 9.34E-02

Brain 1.23E-02 1.27E-02 2.07E-02 3.38E-02 5.99E-02

Breasts 1.14E-02 1.24E-02 ----- ----- -----

Esophagus 1.89E-02 2.18E-02 3.44E-02 5.43E-02 9.94E-02

Eyes 1.23E-02 1.27E-02 2.07E-02 3.39E-02 6.00E-02

Gallbladder Wall 2.15E-02 2.32E-02 3.57E-02 5.28E-02 7.87E-02

Left colon 1.92E-02 1.98E-02 3.00E-02 4.54E-02 8.23E-02

Small Intestine 1.63E-02 1.85E-02 2.83E-02 4.40E-02 7.74E-02

Stomach Wall 1.76E-02 1.88E-02 2.89E-02 4.37E-02 7.60E-02

Right colon 1.76E-02 1.87E-02 2.84E-02 4.52E-02 7.63E-02

Rectum 2.06E-02 2.30E-02 3.40E-02 4.84E-02 8.07E-02

Heart Wall 6.53E-02 7.19E-02 1.34E-01 1.69E-01 2.00E-01

Kidneys 1.78E-02 1.86E-02 2.83E-02 4.34E-02 7.61E-02

Liver 4.81E-02 5.02E-02 7.42E-02 1.02E-01 1.68E-01

Lungs 1.87E-02 1.95E-02 2.87E-02 4.39E-02 7.81E-02

Ovaries 1.78E-02 1.95E-02 2.88E-02 4.53E-02 7.97E-02

Pancreas 2.17E-02 2.28E-02 3.42E-02 5.26E-02 8.98E-02

Salivary Glands 1.25E-02 1.47E-02 2.35E-02 3.81E-02 6.93E-02

Red Marrow 1.30E-02 1.31E-02 1.56E-02 2.08E-02 3.46E-02

Osteogenic Cells 2.37E-02 2.39E-02 2.58E-02 2.88E-02 3.69E-02

Spleen 1.59E-02 1.66E-02 2.58E-02 3.95E-02 7.16E-02

Thymus 1.86E-02 1.92E-02 2.86E-02 4.40E-02 7.67E-02

Thyroid 1.33E-02 1.55E-02 2.47E-02 3.98E-02 7.19E-02

Urinary Bladder Wall 4.83E-02 5.06E-02 7.31E-02 9.96E-02 1.42E-01

Uterus 2.05E-02 2.36E-02 3.73E-02 5.38E-02 8.56E-02

Total Body 1.54E-02 1.52E-02 2.37E-02 3.74E-02 6.73E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.05E-02 2.37E-02 3.53E-02 5.19E-02 9.28E-02

Brain 1.11E-02 1.26E-02 2.07E-02 3.38E-02 5.99E-02

Breasts 1.14E-02 1.24E-02 ----- ----- -----

Esophagus 1.73E-02 2.10E-02 3.33E-02 5.27E-02 9.58E-02

Eyes 1.11E-02 1.26E-02 2.07E-02 3.39E-02 6.02E-02

Gallbladder Wall 2.20E-02 2.60E-02 3.91E-02 5.79E-02 8.57E-02

Left colon 1.67E-02 1.88E-02 2.93E-02 4.44E-02 8.08E-02

Small Intestine 1.54E-02 1.83E-02 2.84E-02 4.42E-02 7.77E-02

Stomach Wall 1.65E-02 1.94E-02 3.01E-02 4.53E-02 7.84E-02

Right colon 1.64E-02 1.90E-02 2.90E-02 4.58E-02 7.73E-02

Rectum 1.77E-02 2.07E-02 3.19E-02 4.63E-02 7.89E-02

Heart Wall 5.84E-02 7.05E-02 1.22E-01 1.70E-01 2.47E-01

Kidneys 1.61E-02 1.84E-02 2.82E-02 4.33E-02 7.62E-02

Liver 4.34E-02 5.06E-02 7.44E-02 1.03E-01 1.68E-01

Lungs 1.66E-02 1.92E-02 2.87E-02 4.39E-02 7.82E-02

Ovaries 1.78E-02 1.95E-02 2.88E-02 4.53E-02 7.97E-02

Pancreas 1.93E-02 2.20E-02 3.33E-02 5.14E-02 9.03E-02

Prostate 1.52E-02 2.02E-02 3.67E-02 4.35E-02 7.65E-02

Salivary Glands 1.19E-02 1.46E-02 2.35E-02 3.82E-02 6.95E-02

Red Marrow 1.19E-02 1.31E-02 1.79E-02 2.58E-02 4.66E-02

Osteogenic Cells 2.16E-02 2.38E-02 3.09E-02 4.17E-02 7.06E-02

Spleen 1.43E-02 1.63E-02 2.57E-02 3.93E-02 7.12E-02

Testes 1.05E-02 1.31E-02 2.08E-02 3.17E-02 5.72E-02

Thymus 1.70E-02 1.96E-02 2.89E-02 4.52E-02 7.91E-02

Thyroid 1.26E-02 1.54E-02 2.47E-02 3.97E-02 7.19E-02

Urinary Bladder Wall 4.61E-02 5.28E-02 7.69E-02 1.04E-01 1.47E-01

Uterus 2.05E-02 2.36E-02 3.73E-02 5.38E-02 8.56E-02

Total Body 1.37E-02 1.50E-02 2.37E-02 3.74E-02 6.72E-02

Effective Dose 1.64E-02 1.90E-02 2.75E-02 4.07E-02 6.91E-02

Radiation Dose Estimates (mSv/MBq) for 123I Hippuran

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.87E-03 2.43E-03 3.61E-03 5.23E-03 8.59E-03

Brain 3.86E-04 4.87E-04 8.09E-04 1.32E-03 2.35E-03

Esophagus 5.18E-04 6.69E-04 1.11E-03 1.78E-03 3.20E-03

Eyes 3.87E-04 4.86E-04 8.06E-04 1.32E-03 2.37E-03

Gallbladder Wall 8.72E-04 1.17E-03 1.89E-03 3.07E-03 4.92E-03

Left colon 1.63E-03 1.96E-03 2.59E-03 3.74E-03 6.39E-03

Small Intestine 3.63E-03 4.56E-03 7.87E-03 1.19E-02 1.97E-02

Stomach Wall 6.41E-04 8.51E-04 1.41E-03 2.18E-03 3.91E-03

Right colon 1.72E-03 2.21E-03 3.20E-03 4.23E-03 7.25E-03

Rectum 1.29E-02 1.74E-02 3.08E-02 4.47E-02 7.40E-02

Heart Wall 5.40E-04 7.02E-04 1.15E-03 1.78E-03 3.27E-03

Kidneys 6.88E-03 8.42E-03 1.15E-02 1.78E-02 2.72E-02

Liver 7.54E-04 1.00E-03 1.60E-03 2.46E-03 4.39E-03

Lungs 4.87E-04 6.42E-04 1.02E-03 1.61E-03 3.00E-03

Pancreas 8.40E-04 1.08E-03 1.77E-03 2.87E-03 4.86E-03

Prostate 1.81E-02 2.34E-02 8.66E-02 4.90E-02 7.81E-02

Salivary Glands 4.41E-04 5.63E-04 9.16E-04 1.49E-03 2.73E-03

Red Marrow 2.13E-03 2.65E-03 2.94E-03 3.12E-03 4.21E-03

Osteogenic Cells 3.00E-03 3.02E-03 3.58E-03 4.14E-03 6.47E-03

Spleen 9.03E-04 1.20E-03 1.95E-03 2.97E-03 5.17E-03

Testes 3.68E-03 4.83E-03 1.34E-02 1.07E-02 1.87E-02

Thymus 4.54E-04 5.97E-04 9.40E-04 1.51E-03 2.80E-03

Thyroid 4.53E-04 5.85E-04 9.59E-04 1.57E-03 2.88E-03

Urinary Bladder Wall 2.11E-01 2.55E-01 3.77E-01 5.53E-01 9.94E-01

Total Body 2.36E-03 2.93E-03 4.70E-03 7.40E-03 1.27E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.64E-03 1.89E-03 2.76E-03 4.27E-03 7.49E-03

Brain 4.80E-04 4.96E-04 8.07E-04 1.32E-03 2.35E-03

Breasts 4.20E-04 4.55E-04 ----- ----- -----

Esophagus 5.95E-04 7.12E-04 1.18E-03 1.83E-03 3.38E-03

Eyes 4.82E-04 5.01E-04 8.17E-04 1.34E-03 2.38E-03

Gallbladder Wall 1.67E-03 1.93E-03 2.91E-03 4.36E-03 7.18E-03

Left colon 3.09E-03 4.15E-03 6.78E-03 1.16E-02 2.08E-02

Small Intestine 4.49E-03 5.02E-03 7.71E-03 1.16E-02 1.69E-02

Stomach Wall 8.63E-04 9.63E-04 1.52E-03 2.41E-03 4.14E-03

Right colon 1.75E-03 1.92E-03 3.26E-03 4.86E-03 7.89E-03

Rectum 3.33E-02 4.90E-02 6.22E-02 8.34E-02 1.30E-01

Heart Wall 6.57E-04 6.91E-04 1.09E-03 1.70E-03 3.06E-03

Kidneys 7.56E-03 8.57E-03 1.13E-02 1.76E-02 2.67E-02

Liver 9.35E-04 1.02E-03 1.59E-03 2.48E-03 4.42E-03

Lungs 6.17E-04 6.46E-04 9.91E-04 1.57E-03 2.88E-03

Ovaries 1.22E-02 1.77E-02 2.06E-02 3.78E-02 7.47E-02

Pancreas 1.16E-03 1.33E-03 2.08E-03 3.36E-03 5.53E-03

Salivary Glands 4.98E-04 5.92E-04 9.50E-04 1.55E-03 2.80E-03

Red Marrow 2.40E-03 2.23E-03 2.33E-03 2.53E-03 3.05E-03

Osteogenic Cells 2.89E-03 2.55E-03 2.58E-03 2.70E-03 3.46E-03

Spleen 1.23E-03 1.35E-03 2.09E-03 3.18E-03 5.56E-03

Thymus 5.60E-04 5.91E-04 9.02E-04 1.47E-03 2.74E-03

Thyroid 4.93E-04 5.78E-04 9.25E-04 1.51E-03 2.76E-03

Urinary Bladder Wall 2.22E-01 2.24E-01 3.24E-01 4.85E-01 8.64E-01

Uterus 3.24E-02 4.69E-02 7.74E-02 1.08E-01 1.63E-01

Total Body 3.19E-03 2.90E-03 4.47E-03 6.92E-03 1.21E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.75E-03 2.16E-03 3.18E-03 4.75E-03 8.04E-03

Brain 4.33E-04 4.91E-04 8.08E-04 1.32E-03 2.35E-03

Breasts 4.20E-04 4.55E-04 ----- ----- -----

Esophagus 5.56E-04 6.91E-04 1.15E-03 1.80E-03 3.29E-03

Eyes 4.35E-04 4.93E-04 8.11E-04 1.33E-03 2.38E-03

Gallbladder Wall 1.27E-03 1.55E-03 2.40E-03 3.72E-03 6.05E-03

Left colon 2.36E-03 3.05E-03 4.68E-03 7.68E-03 1.36E-02

Small Intestine 4.06E-03 4.79E-03 7.79E-03 1.18E-02 1.83E-02

Stomach Wall 7.52E-04 9.07E-04 1.46E-03 2.30E-03 4.03E-03

Right colon 1.74E-03 2.07E-03 3.23E-03 4.54E-03 7.57E-03

Rectum 2.31E-02 3.32E-02 4.65E-02 6.41E-02 1.02E-01

Heart Wall 5.98E-04 6.96E-04 1.12E-03 1.74E-03 3.17E-03

Kidneys 7.22E-03 8.50E-03 1.14E-02 1.77E-02 2.69E-02

Liver 8.45E-04 1.01E-03 1.60E-03 2.47E-03 4.40E-03

Lungs 5.52E-04 6.44E-04 1.00E-03 1.59E-03 2.94E-03

Ovaries 1.22E-02 1.77E-02 2.06E-02 3.78E-02 7.47E-02

Pancreas 1.00E-03 1.20E-03 1.92E-03 3.11E-03 5.19E-03

Prostate 1.81E-02 2.34E-02 8.66E-02 4.90E-02 7.81E-02

Salivary Glands 4.69E-04 5.77E-04 9.33E-04 1.52E-03 2.77E-03

Red Marrow 2.27E-03 2.44E-03 2.64E-03 2.83E-03 3.63E-03

Osteogenic Cells 2.95E-03 2.79E-03 3.08E-03 3.42E-03 4.96E-03

Spleen 1.07E-03 1.27E-03 2.02E-03 3.07E-03 5.37E-03

Testes 3.68E-03 4.83E-03 1.34E-02 1.07E-02 1.87E-02

Thymus 5.07E-04 5.94E-04 9.21E-04 1.49E-03 2.77E-03

Thyroid 4.73E-04 5.82E-04 9.42E-04 1.54E-03 2.82E-03

Urinary Bladder Wall 2.16E-01 2.40E-01 3.51E-01 5.19E-01 9.29E-01

Uterus 3.24E-02 4.69E-02 7.74E-02 1.08E-01 1.63E-01

Total Body 2.78E-03 2.92E-03 4.58E-03 7.16E-03 1.24E-02

Effective Dose 1.11E-02 1.26E-02 1.85E-02 2.70E-02 4.77E-02

Radiation Dose Estimates (mSv/MBq) for 123I mIBG

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.18E-02 2.76E-02 3.91E-02 5.47E-02 9.48E-02

Brain 4.11E-03 5.18E-03 8.59E-03 1.40E-02 2.47E-02

Esophagus 1.16E-02 1.50E-02 2.35E-02 3.52E-02 6.15E-02

Eyes 4.06E-03 5.13E-03 8.49E-03 1.39E-02 2.47E-02

Gallbladder Wall 2.92E-02 3.65E-02 5.10E-02 7.45E-02 1.16E-01

Left colon 7.93E-03 1.11E-02 1.80E-02 2.69E-02 4.87E-02

Small Intestine 8.31E-03 1.06E-02 1.69E-02 2.60E-02 4.48E-02

Stomach Wall 1.07E-02 1.39E-02 2.13E-02 3.16E-02 5.26E-02

Right colon 1.09E-02 1.38E-02 2.16E-02 3.23E-02 5.31E-02

Rectum 9.45E-03 1.22E-02 2.04E-02 3.05E-02 5.34E-02

Heart Wall 2.00E-02 2.65E-02 4.11E-02 6.22E-02 1.06E-01

Kidneys 1.60E-02 2.03E-02 2.87E-02 4.27E-02 6.81E-02

Liver 7.41E-02 9.76E-02 1.42E-01 1.96E-01 3.13E-01

Lungs 1.64E-02 2.12E-02 3.38E-02 5.15E-02 9.29E-02

Pancreas 1.25E-02 1.58E-02 2.38E-02 3.65E-02 6.62E-02

Prostate 1.11E-02 1.46E-02 3.83E-02 3.18E-02 5.51E-02

Salivary Glands 1.73E-02 2.14E-02 3.23E-02 4.32E-02 6.38E-02

Red Marrow 6.47E-03 7.70E-03 1.04E-02 1.46E-02 2.57E-02

Osteogenic Cells 1.20E-02 1.38E-02 1.97E-02 2.85E-02 5.36E-02

Spleen 2.34E-02 2.73E-02 4.19E-02 6.34E-02 1.05E-01

Testes 5.08E-03 6.41E-03 1.17E-02 1.54E-02 2.81E-02

Thymus 8.09E-03 1.07E-02 1.56E-02 2.56E-02 4.57E-02

Thyroid 6.05E-03 7.83E-03 1.25E-02 2.00E-02 3.51E-02

Urinary Bladder Wall 7.35E-02 8.97E-02 1.32E-01 1.95E-01 3.52E-01

Total Body 6.84E-03 8.48E-03 1.36E-02 2.16E-02 3.84E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.71E-02 2.94E-02 4.30E-02 5.92E-02 1.03E-01

Brain 5.09E-03 5.26E-03 8.60E-03 1.42E-02 2.49E-02

Breasts 6.07E-03 6.54E-03 ----- ----- -----

Esophagus 1.47E-02 1.64E-02 2.56E-02 3.92E-02 7.46E-02

Eyes 5.08E-03 5.25E-03 8.55E-03 1.40E-02 2.47E-02

Gallbladder Wall 2.13E-02 2.31E-02 3.41E-02 4.81E-02 7.98E-02

Left colon 1.02E-02 1.09E-02 1.68E-02 2.59E-02 4.72E-02

Small Intestine 9.90E-03 1.11E-02 1.69E-02 2.61E-02 4.51E-02

Stomach Wall 1.19E-02 1.27E-02 1.91E-02 2.87E-02 4.94E-02

Right colon 1.09E-02 1.19E-02 1.91E-02 2.98E-02 4.92E-02

Rectum 1.71E-02 2.23E-02 3.03E-02 4.27E-02 7.10E-02

Heart Wall 2.21E-02 2.42E-02 4.23E-02 5.57E-02 7.58E-02

Kidneys 1.94E-02 2.13E-02 2.94E-02 4.37E-02 6.86E-02

Liver 9.24E-02 9.78E-02 1.43E-01 1.96E-01 3.15E-01

Lungs 2.02E-02 2.31E-02 3.29E-02 5.08E-02 9.07E-02

Ovaries 1.07E-02 1.28E-02 1.76E-02 2.95E-02 5.53E-02

Pancreas 2.01E-02 2.18E-02 3.18E-02 4.83E-02 7.67E-02

Salivary Glands 2.04E-02 2.22E-02 3.23E-02 4.31E-02 6.35E-02

Red Marrow 7.68E-03 7.10E-03 8.04E-03 9.96E-03 1.55E-02

Osteogenic Cells 1.39E-02 1.34E-02 1.53E-02 1.78E-02 2.62E-02

Spleen 2.72E-02 2.77E-02 4.23E-02 6.41E-02 1.07E-01

Thymus 1.04E-02 1.09E-02 1.59E-02 2.47E-02 4.32E-02

Thyroid 6.70E-03 7.76E-03 1.22E-02 1.92E-02 3.40E-02

Urinary Bladder Wall 7.82E-02 7.97E-02 1.15E-01 1.73E-01 3.10E-01

Uterus 1.70E-02 2.21E-02 3.59E-02 5.18E-02 8.32E-02

Total Body 1.03E-02 8.81E-03 1.37E-02 2.15E-02 3.86E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 2.45E-02 2.85E-02 4.11E-02 5.69E-02 9.89E-02

Brain 4.60E-03 5.22E-03 8.60E-03 1.41E-02 2.48E-02

Breasts 6.07E-03 6.54E-03 ----- ----- -----

Esophagus 1.31E-02 1.57E-02 2.46E-02 3.72E-02 6.80E-02

Eyes 4.57E-03 5.19E-03 8.52E-03 1.40E-02 2.47E-02

Gallbladder Wall 2.53E-02 2.98E-02 4.25E-02 6.13E-02 9.78E-02

Left colon 9.05E-03 1.10E-02 1.74E-02 2.64E-02 4.80E-02

Small Intestine 9.11E-03 1.08E-02 1.69E-02 2.60E-02 4.49E-02

Stomach Wall 1.13E-02 1.33E-02 2.02E-02 3.02E-02 5.10E-02

Right colon 1.09E-02 1.28E-02 2.04E-02 3.11E-02 5.11E-02

Rectum 1.33E-02 1.72E-02 2.54E-02 3.66E-02 6.22E-02

Heart Wall 2.11E-02 2.53E-02 4.17E-02 5.90E-02 9.12E-02

Kidneys 1.77E-02 2.08E-02 2.91E-02 4.32E-02 6.83E-02

Liver 8.33E-02 9.77E-02 1.43E-01 1.96E-01 3.14E-01

Lungs 1.83E-02 2.22E-02 3.34E-02 5.11E-02 9.18E-02

Ovaries 1.07E-02 1.28E-02 1.76E-02 2.95E-02 5.53E-02

Pancreas 1.63E-02 1.88E-02 2.78E-02 4.24E-02 7.15E-02

Prostate 1.11E-02 1.46E-02 3.83E-02 3.18E-02 5.51E-02

Salivary Glands 1.88E-02 2.18E-02 3.23E-02 4.31E-02 6.37E-02

Red Marrow 7.08E-03 7.40E-03 9.23E-03 1.23E-02 2.06E-02

Osteogenic Cells 1.30E-02 1.36E-02 1.75E-02 2.31E-02 3.99E-02

Spleen 2.53E-02 2.75E-02 4.21E-02 6.37E-02 1.06E-01

Testes 5.08E-03 6.41E-03 1.17E-02 1.54E-02 2.81E-02

Thymus 9.25E-03 1.08E-02 1.58E-02 2.51E-02 4.44E-02

Thyroid 6.37E-03 7.79E-03 1.24E-02 1.96E-02 3.46E-02

Urinary Bladder Wall 7.58E-02 8.47E-02 1.24E-01 1.84E-01 3.31E-01

Uterus 1.70E-02 2.21E-02 3.59E-02 5.18E-02 8.32E-02

Total Body 8.58E-03 8.65E-03 1.36E-02 2.15E-02 3.85E-02

Effective Dose 1.60E-02 1.87E-02 2.71E-02 3.96E-02 6.80E-02

Radiation Dose Estimates (mSv/MBq) for 131I Hippuran

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 4.45E-03 5.77E-03 8.64E-03 1.33E-02 2.32E-02

Brain 1.30E-03 1.66E-03 2.82E-03 4.71E-03 8.62E-03

Esophagus 1.71E-03 2.19E-03 3.71E-03 5.99E-03 1.10E-02

Eyes 1.32E-03 1.65E-03 2.81E-03 4.80E-03 8.91E-03

Gallbladder Wall 2.72E-03 3.40E-03 5.50E-03 8.80E-03 1.52E-02

Left colon 4.55E-03 5.14E-03 7.59E-03 1.05E-02 1.82E-02

Small Intestine 8.83E-03 1.10E-02 1.80E-02 2.68E-02 4.37E-02

Stomach Wall 2.05E-03 2.67E-03 4.37E-03 7.08E-03 1.28E-02

Right colon 4.83E-03 6.16E-03 8.69E-03 1.16E-02 2.03E-02

Rectum 2.74E-02 3.57E-02 6.01E-02 8.43E-02 1.34E-01

Heart Wall 1.76E-03 2.29E-03 3.82E-03 6.08E-03 1.13E-02

Kidneys 3.08E-02 3.80E-02 5.25E-02 8.39E-02 1.31E-01

Liver 2.30E-03 3.04E-03 4.88E-03 7.72E-03 1.38E-02

Lungs 1.58E-03 2.07E-03 3.40E-03 5.52E-03 1.03E-02

Pancreas 2.55E-03 3.29E-03 5.36E-03 8.80E-03 1.51E-02

Prostate 3.86E-02 4.83E-02 1.68E-01 9.87E-02 1.36E-01

Salivary Glands 1.44E-03 1.86E-03 3.09E-03 5.16E-03 9.64E-03

Red Marrow 5.66E-03 6.96E-03 7.93E-03 8.94E-03 1.35E-02

Osteogenic Cells 4.42E-03 4.54E-03 5.43E-03 6.50E-03 1.06E-02

Spleen 2.56E-03 3.37E-03 5.53E-03 8.55E-03 1.54E-02

Testes 9.85E-03 1.31E-02 3.63E-02 2.85E-02 4.51E-02

Thymus 1.54E-03 2.02E-03 3.28E-03 5.35E-03 1.02E-02

Thyroid 1.49E-03 1.95E-03 3.26E-03 5.44E-03 1.04E-02

Urinary Bladder Wall 9.36E-01 1.20E+00 1.82E+00 2.82E+00 5.38E+00

Total Body 8.90E-03 1.12E-02 1.86E-02 3.00E-02 5.35E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 4.09E-03 4.77E-03 7.20E-03 1.11E-02 2.06E-02

Brain 1.59E-03 1.72E-03 2.82E-03 4.70E-03 8.60E-03

Breasts 1.59E-03 1.73E-03 ----- ----- -----

Esophagus 1.98E-03 2.35E-03 3.85E-03 6.15E-03 1.14E-02

Eyes 1.61E-03 1.74E-03 2.86E-03 4.78E-03 8.74E-03

Gallbladder Wall 4.48E-03 5.17E-03 7.80E-03 1.15E-02 2.01E-02

Left colon 7.46E-03 9.55E-03 1.54E-02 2.64E-02 4.45E-02

Small Intestine 1.09E-02 1.20E-02 1.81E-02 2.68E-02 3.90E-02

Stomach Wall 2.72E-03 2.97E-03 4.59E-03 7.60E-03 1.30E-02

Right colon 4.92E-03 5.23E-03 8.80E-03 1.33E-02 2.07E-02

Rectum 6.21E-02 8.78E-02 1.10E-01 1.47E-01 2.22E-01

Heart Wall 2.12E-03 2.29E-03 3.65E-03 5.83E-03 1.06E-02

Kidneys 3.41E-02 3.91E-02 5.18E-02 8.31E-02 1.29E-01

Liver 2.80E-03 3.12E-03 4.86E-03 7.71E-03 1.39E-02

Lungs 1.94E-03 2.11E-03 3.31E-03 5.35E-03 9.89E-03

Ovaries 2.79E-02 3.81E-02 4.31E-02 8.14E-02 1.44E-01

Pancreas 3.47E-03 3.94E-03 6.18E-03 9.56E-03 1.65E-02

Salivary Glands 1.70E-03 1.99E-03 3.19E-03 5.28E-03 9.71E-03

Red Marrow 6.22E-03 5.88E-03 6.40E-03 7.65E-03 1.12E-02

Osteogenic Cells 4.34E-03 4.00E-03 4.39E-03 5.06E-03 7.78E-03

Spleen 3.33E-03 3.72E-03 5.87E-03 9.12E-03 1.58E-02

Thymus 1.84E-03 2.03E-03 3.16E-03 5.22E-03 9.77E-03

Thyroid 1.69E-03 1.94E-03 3.11E-03 5.18E-03 9.60E-03

Urinary Bladder Wall 1.14E+00 1.15E+00 1.74E+00 2.72E+00 5.19E+00

Uterus 6.37E-02 8.80E-02 1.47E-01 1.96E-01 2.82E-01

Total Body 1.14E-02 1.14E-02 1.81E-02 2.90E-02 5.23E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 4.27E-03 5.27E-03 7.92E-03 1.22E-02 2.19E-02

Brain 1.45E-03 1.69E-03 2.82E-03 4.71E-03 8.61E-03

Breasts 1.59E-03 1.73E-03 ----- ----- -----

Esophagus 1.85E-03 2.27E-03 3.78E-03 6.07E-03 1.12E-02

Eyes 1.46E-03 1.70E-03 2.84E-03 4.79E-03 8.82E-03

Gallbladder Wall 3.60E-03 4.28E-03 6.65E-03 1.01E-02 1.77E-02

Left colon 6.01E-03 7.35E-03 1.15E-02 1.84E-02 3.13E-02

Small Intestine 9.88E-03 1.15E-02 1.80E-02 2.68E-02 4.13E-02

Stomach Wall 2.38E-03 2.82E-03 4.48E-03 7.34E-03 1.29E-02

Right colon 4.87E-03 5.70E-03 8.75E-03 1.24E-02 2.05E-02

Rectum 4.48E-02 6.18E-02 8.52E-02 1.16E-01 1.78E-01

Heart Wall 1.94E-03 2.29E-03 3.74E-03 5.96E-03 1.10E-02

Kidneys 3.24E-02 3.85E-02 5.22E-02 8.35E-02 1.30E-01

Liver 2.55E-03 3.08E-03 4.87E-03 7.72E-03 1.38E-02

Lungs 1.76E-03 2.09E-03 3.36E-03 5.43E-03 1.01E-02

Ovaries 2.79E-02 3.81E-02 4.31E-02 8.14E-02 1.44E-01

Pancreas 3.01E-03 3.61E-03 5.77E-03 9.18E-03 1.58E-02

Prostate 3.86E-02 4.83E-02 1.68E-01 9.87E-02 1.36E-01

Salivary Glands 1.57E-03 1.92E-03 3.14E-03 5.22E-03 9.67E-03

Red Marrow 5.94E-03 6.42E-03 7.16E-03 8.30E-03 1.23E-02

Osteogenic Cells 4.38E-03 4.27E-03 4.91E-03 5.78E-03 9.20E-03

Spleen 2.94E-03 3.55E-03 5.70E-03 8.84E-03 1.56E-02

Testes 9.85E-03 1.31E-02 3.63E-02 2.85E-02 4.51E-02

Thymus 1.69E-03 2.02E-03 3.22E-03 5.28E-03 9.98E-03

Thyroid 1.59E-03 1.95E-03 3.18E-03 5.31E-03 1.00E-02

Urinary Bladder Wall 1.04E+00 1.17E+00 1.78E+00 2.77E+00 5.28E+00

Uterus 6.37E-02 8.80E-02 1.47E-01 1.96E-01 2.82E-01

Total Body 1.01E-02 1.13E-02 1.84E-02 2.95E-02 5.29E-02

Effective Dose 4.86E-02 5.53E-02 8.38E-02 1.29E-01 2.42E-01

Radiation Dose Estimates (mSv/MBq) for 131I mIBG

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.53E-01 1.92E-01 2.79E-01 3.92E-01 6.84E-01

Brain 3.75E-02 4.77E-02 8.09E-02 1.34E-01 2.43E-01

Esophagus 9.08E-02 1.17E-01 1.86E-01 2.79E-01 4.91E-01

Eyes 3.72E-02 4.75E-02 8.05E-02 1.37E-01 2.50E-01

Gallbladder Wall 1.98E-01 2.40E-01 3.36E-01 4.88E-01 7.91E-01

Left colon 6.53E-02 8.74E-02 1.46E-01 2.23E-01 3.97E-01

Small Intestine 6.55E-02 8.34E-02 1.33E-01 2.10E-01 3.65E-01

Stomach Wall 8.77E-02 1.12E-01 1.72E-01 2.61E-01 4.36E-01

Right colon 8.56E-02 1.06E-01 1.67E-01 2.53E-01 4.21E-01

Rectum 6.13E-02 7.63E-02 1.27E-01 1.98E-01 3.48E-01

Heart Wall 3.81E-01 5.28E-01 8.47E-01 1.35E+00 2.28E+00

Kidneys 1.29E-01 1.62E-01 2.27E-01 3.43E-01 5.42E-01

Liver 9.30E-01 1.25E+00 1.90E+00 2.69E+00 4.50E+00

Lungs 1.74E-01 2.26E-01 3.80E-01 6.04E-01 1.15E+00

Pancreas 9.80E-02 1.24E-01 1.89E-01 2.85E-01 5.12E-01

Prostate 6.85E-02 8.57E-02 1.86E-01 2.06E-01 3.50E-01

Salivary Glands 2.46E-01 3.07E-01 4.69E-01 6.16E-01 8.87E-01

Red Marrow 5.41E-02 6.46E-02 9.17E-02 1.40E-01 2.70E-01

Osteogenic Cells 5.63E-02 6.61E-02 9.42E-02 1.36E-01 2.58E-01

Spleen 5.66E-01 6.54E-01 1.04E+00 1.63E+00 2.76E+00

Testes 4.33E-02 5.51E-02 9.79E-02 1.42E-01 2.63E-01

Thymus 7.08E-02 9.29E-02 1.36E-01 2.26E-01 4.02E-01

Thyroid 5.18E-02 6.66E-02 1.08E-01 1.74E-01 3.16E-01

Urinary Bladder Wall 5.77E-01 7.36E-01 1.13E+00 1.75E+00 3.33E+00

Total Body 7.18E-02 9.08E-02 1.51E-01 2.46E-01 4.50E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.99E-01 2.21E-01 3.21E-01 4.52E-01 7.80E-01

Brain 4.60E-02 4.93E-02 8.09E-02 1.37E-01 2.47E-01

Breasts 5.92E-02 6.48E-02 ----- ----- -----

Esophagus 1.17E-01 1.30E-01 1.97E-01 3.02E-01 5.66E-01

Eyes 4.60E-02 4.94E-02 8.08E-02 1.34E-01 2.43E-01

Gallbladder Wall 1.51E-01 1.64E-01 2.41E-01 3.35E-01 5.75E-01

Left colon 8.27E-02 8.72E-02 1.36E-01 2.11E-01 3.75E-01

Small Intestine 7.82E-02 8.77E-02 1.34E-01 2.08E-01 3.68E-01

Stomach Wall 9.89E-02 1.05E-01 1.58E-01 2.41E-01 4.13E-01

Right colon 8.69E-02 9.35E-02 1.49E-01 2.33E-01 3.96E-01

Rectum 9.02E-02 1.06E-01 1.54E-01 2.29E-01 3.88E-01

Heart Wall 4.74E-01 5.32E-01 1.13E+00 1.31E+00 1.20E+00

Kidneys 1.54E-01 1.72E-01 2.32E-01 3.51E-01 5.49E-01

Liver 1.18E+00 1.26E+00 1.90E+00 2.69E+00 4.51E+00

Lungs 2.15E-01 2.59E-01 3.76E-01 5.99E-01 1.13E+00

Ovaries 7.39E-02 8.43E-02 1.23E-01 2.03E-01 3.66E-01

Pancreas 1.47E-01 1.59E-01 2.33E-01 3.52E-01 5.65E-01

Salivary Glands 2.96E-01 3.21E-01 4.69E-01 6.14E-01 8.82E-01

Red Marrow 6.42E-02 6.13E-02 7.79E-02 1.14E-01 2.14E-01

Osteogenic Cells 6.14E-02 6.42E-02 8.21E-02 1.07E-01 1.86E-01

Spleen 6.54E-01 6.58E-01 1.04E+00 1.63E+00 2.76E+00

Thymus 8.61E-02 9.34E-02 1.38E-01 2.15E-01 3.74E-01

Thyroid 5.95E-02 6.80E-02 1.06E-01 1.70E-01 3.04E-01

Urinary Bladder Wall 7.01E-01 7.10E-01 1.08E+00 1.69E+00 3.21E+00

Uterus 9.26E-02 1.11E-01 1.80E-01 2.65E-01 4.39E-01

Total Body 9.86E-02 9.55E-02 1.52E-01 2.45E-01 4.52E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.76E-01 2.07E-01 3.00E-01 4.22E-01 7.32E-01

Brain 4.18E-02 4.85E-02 8.09E-02 1.35E-01 2.45E-01

Breasts 5.92E-02 6.48E-02 ----- ----- -----

Esophagus 1.04E-01 1.23E-01 1.92E-01 2.91E-01 5.28E-01

Eyes 4.16E-02 4.84E-02 8.07E-02 1.36E-01 2.47E-01

Gallbladder Wall 1.75E-01 2.02E-01 2.88E-01 4.12E-01 6.83E-01

Left colon 7.40E-02 8.73E-02 1.41E-01 2.17E-01 3.86E-01

Small Intestine 7.18E-02 8.56E-02 1.33E-01 2.09E-01 3.67E-01

Stomach Wall 9.33E-02 1.09E-01 1.65E-01 2.51E-01 4.24E-01

Right colon 8.63E-02 9.99E-02 1.58E-01 2.43E-01 4.09E-01

Rectum 7.57E-02 9.11E-02 1.41E-01 2.13E-01 3.68E-01

Heart Wall 4.28E-01 5.30E-01 9.87E-01 1.33E+00 1.74E+00

Kidneys 1.42E-01 1.67E-01 2.29E-01 3.47E-01 5.45E-01

Liver 1.05E+00 1.25E+00 1.90E+00 2.69E+00 4.50E+00

Lungs 1.95E-01 2.43E-01 3.78E-01 6.01E-01 1.14E+00

Ovaries 7.39E-02 8.43E-02 1.23E-01 2.03E-01 3.66E-01

Pancreas 1.23E-01 1.41E-01 2.11E-01 3.19E-01 5.38E-01

Prostate 6.85E-02 8.57E-02 1.86E-01 2.06E-01 3.50E-01

Salivary Glands 2.71E-01 3.14E-01 4.69E-01 6.15E-01 8.84E-01

Red Marrow 5.92E-02 6.30E-02 8.48E-02 1.27E-01 2.42E-01

Osteogenic Cells 5.88E-02 6.52E-02 8.82E-02 1.22E-01 2.22E-01

Spleen 6.10E-01 6.56E-01 1.04E+00 1.63E+00 2.76E+00

Testes 4.33E-02 5.51E-02 9.79E-02 1.42E-01 2.63E-01

Thymus 7.84E-02 9.32E-02 1.37E-01 2.20E-01 3.88E-01

Thyroid 5.57E-02 6.73E-02 1.07E-01 1.72E-01 3.10E-01

Urinary Bladder Wall 6.39E-01 7.23E-01 1.10E+00 1.72E+00 3.27E+00

Uterus 9.26E-02 1.11E-01 1.80E-01 2.65E-01 4.39E-01

Total Body 8.52E-02 9.32E-02 1.52E-01 2.46E-01 4.51E-01

Effective Dose 1.59E-01 1.87E-01 2.81E-01 4.21E-01 7.42E-01

Radiation Dose Estimates (mSv/MBq) for 123I Iodide, Thyroid Blocked, 0% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.64E-03 9.69E-03 1.46E-02 2.24E-02 4.00E-02

Brain 5.27E-03 6.63E-03 1.10E-02 1.80E-02 3.18E-02

Esophagus 6.03E-03 7.70E-03 1.25E-02 2.03E-02 3.70E-02

Eyes 5.27E-03 6.63E-03 1.10E-02 1.80E-02 3.21E-02

Gallbladder Wall 7.18E-03 9.23E-03 1.47E-02 2.26E-02 3.27E-02

Left colon 7.39E-03 9.08E-03 1.42E-02 2.15E-02 3.94E-02

Small Intestine 8.31E-03 1.04E-02 1.65E-02 2.58E-02 4.55E-02

Stomach Wall 6.49E-03 8.46E-03 1.34E-02 2.03E-02 3.58E-02

Right colon 7.31E-03 9.45E-03 1.43E-02 2.26E-02 3.86E-02

Rectum 1.20E-02 1.54E-02 2.57E-02 3.84E-02 6.72E-02

Heart Wall 6.47E-03 8.20E-03 1.29E-02 1.96E-02 3.54E-02

Kidneys 1.13E-02 1.38E-02 1.91E-02 2.96E-02 4.73E-02

Liver 6.47E-03 8.18E-03 1.30E-02 1.99E-02 3.58E-02

Lungs 5.96E-03 7.74E-03 1.19E-02 1.86E-02 3.42E-02

Pancreas 7.22E-03 9.09E-03 1.40E-02 2.21E-02 3.93E-02

Prostate 1.39E-02 1.83E-02 4.82E-02 3.95E-02 6.83E-02

Salivary Glands 5.99E-03 7.64E-03 1.24E-02 2.02E-02 3.67E-02

Red Marrow 5.86E-03 7.23E-03 1.10E-02 1.67E-02 3.15E-02

Osteogenic Cells 1.05E-02 1.28E-02 1.93E-02 2.90E-02 5.52E-02

Spleen 6.58E-03 8.34E-03 1.32E-02 2.02E-02 3.66E-02

Testes 6.69E-03 8.43E-03 1.53E-02 2.02E-02 3.65E-02

Thymus 5.88E-03 7.51E-03 1.17E-02 1.84E-02 3.36E-02

Thyroid 6.00E-03 7.65E-03 1.24E-02 2.01E-02 3.67E-02

Urinary Bladder Wall 9.42E-02 1.15E-01 1.70E-01 2.50E-01 4.50E-01

Total Body 6.59E-03 8.17E-03 1.30E-02 2.05E-02 3.69E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.98E-03 9.39E-03 1.41E-02 2.17E-02 3.92E-02

Brain 6.54E-03 6.75E-03 1.10E-02 1.80E-02 3.18E-02

Breasts 5.47E-03 5.85E-03 ----- ----- -----

Esophagus 6.67E-03 7.83E-03 1.25E-02 2.02E-02 3.68E-02

Eyes 6.54E-03 6.75E-03 1.10E-02 1.80E-02 3.18E-02

Gallbladder Wall 8.93E-03 9.76E-03 1.52E-02 2.33E-02 3.36E-02

Left colon 9.50E-03 1.01E-02 1.59E-02 2.47E-02 4.52E-02

Small Intestine 9.50E-03 1.07E-02 1.65E-02 2.56E-02 4.42E-02

Stomach Wall 8.11E-03 8.63E-03 1.34E-02 2.04E-02 3.58E-02

Right colon 8.92E-03 9.45E-03 1.43E-02 2.29E-02 3.89E-02

Rectum 2.19E-02 2.85E-02 3.86E-02 5.42E-02 9.01E-02

Heart Wall 8.10E-03 8.31E-03 1.28E-02 1.96E-02 3.53E-02

Kidneys 1.30E-02 1.40E-02 1.90E-02 2.94E-02 4.71E-02

Liver 8.00E-03 8.31E-03 1.30E-02 1.99E-02 3.58E-02

Lungs 7.66E-03 7.86E-03 1.19E-02 1.85E-02 3.40E-02

Ovaries 1.33E-02 1.60E-02 2.18E-02 3.64E-02 6.86E-02

Pancreas 8.95E-03 9.34E-03 1.42E-02 2.23E-02 3.96E-02

Salivary Glands 6.61E-03 7.76E-03 1.24E-02 2.01E-02 3.65E-02

Red Marrow 7.00E-03 7.14E-03 8.55E-03 1.14E-02 1.89E-02

Osteogenic Cells 1.25E-02 1.27E-02 1.37E-02 1.53E-02 1.96E-02

Spleen 8.23E-03 8.56E-03 1.33E-02 2.03E-02 3.67E-02

Thymus 7.40E-03 7.62E-03 1.16E-02 1.83E-02 3.34E-02

Thyroid 6.61E-03 7.76E-03 1.24E-02 2.01E-02 3.65E-02

Urinary Bladder Wall 1.00E-01 1.02E-01 1.48E-01 2.21E-01 3.97E-01

Uterus 2.15E-02 2.81E-02 4.54E-02 6.54E-02 1.05E-01

Total Body 8.15E-03 8.27E-03 1.29E-02 2.03E-02 3.67E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.31E-03 9.54E-03 1.43E-02 2.21E-02 3.96E-02

Brain 5.90E-03 6.69E-03 1.10E-02 1.80E-02 3.18E-02

Breasts 5.47E-03 5.85E-03 ----- ----- -----

Esophagus 6.35E-03 7.77E-03 1.25E-02 2.03E-02 3.69E-02

Eyes 5.90E-03 6.69E-03 1.10E-02 1.80E-02 3.19E-02

Gallbladder Wall 8.05E-03 9.50E-03 1.50E-02 2.30E-02 3.31E-02

Left colon 8.45E-03 9.58E-03 1.50E-02 2.31E-02 4.23E-02

Small Intestine 8.91E-03 1.06E-02 1.65E-02 2.57E-02 4.48E-02

Stomach Wall 7.30E-03 8.54E-03 1.34E-02 2.04E-02 3.58E-02

Right colon 8.12E-03 9.45E-03 1.43E-02 2.27E-02 3.87E-02

Rectum 1.70E-02 2.20E-02 3.22E-02 4.63E-02 7.86E-02

Heart Wall 7.29E-03 8.25E-03 1.29E-02 1.96E-02 3.53E-02

Kidneys 1.21E-02 1.39E-02 1.90E-02 2.95E-02 4.72E-02

Liver 7.24E-03 8.25E-03 1.30E-02 1.99E-02 3.58E-02

Lungs 6.81E-03 7.80E-03 1.19E-02 1.86E-02 3.41E-02

Ovaries 1.33E-02 1.60E-02 2.18E-02 3.64E-02 6.86E-02

Pancreas 8.09E-03 9.21E-03 1.41E-02 2.22E-02 3.95E-02

Prostate 1.39E-02 1.83E-02 4.82E-02 3.95E-02 6.83E-02

Salivary Glands 6.30E-03 7.70E-03 1.24E-02 2.01E-02 3.66E-02

Red Marrow 6.43E-03 7.19E-03 9.78E-03 1.40E-02 2.52E-02

Osteogenic Cells 1.15E-02 1.27E-02 1.65E-02 2.21E-02 3.74E-02

Spleen 7.40E-03 8.45E-03 1.33E-02 2.03E-02 3.66E-02

Testes 6.69E-03 8.43E-03 1.53E-02 2.02E-02 3.65E-02

Thymus 6.64E-03 7.56E-03 1.17E-02 1.84E-02 3.35E-02

Thyroid 6.30E-03 7.70E-03 1.24E-02 2.01E-02 3.66E-02

Urinary Bladder Wall 9.72E-02 1.09E-01 1.59E-01 2.36E-01 4.24E-01

Uterus 2.15E-02 2.81E-02 4.54E-02 6.54E-02 1.05E-01

Total Body 7.37E-03 8.22E-03 1.29E-02 2.04E-02 3.68E-02

Effective Dose 1.05E-02 1.20E-02 1.75E-02 1.30E-01 2.12E-01

Radiation Dose Estimates (mSv/MBq) for 123I Iodide, 5% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.00E-02 1.32E-02 1.93E-02 2.87E-02 4.88E-02

Brain 3.92E-03 4.96E-03 8.23E-03 1.34E-02 2.37E-02

Esophagus 1.50E-02 2.00E-02 3.11E-02 5.17E-02 8.18E-02

Eyes 3.88E-03 4.92E-03 8.17E-03 1.34E-02 2.39E-02

Gallbladder Wall 7.52E-03 9.68E-03 1.48E-02 2.29E-02 3.50E-02

Left colon 1.42E-02 1.73E-02 2.46E-02 3.62E-02 6.09E-02

Small Intestine 4.84E-02 5.90E-02 9.35E-02 1.33E-01 1.84E-01

Stomach Wall 7.90E-02 9.69E-02 1.50E-01 2.08E-01 2.71E-01

Right colon 8.18E-03 1.19E-02 1.68E-02 2.54E-02 4.21E-02

Rectum 1.23E-02 1.59E-02 2.60E-02 3.87E-02 6.63E-02

Heart Wall 9.37E-03 1.20E-02 1.84E-02 2.69E-02 4.64E-02

Kidneys 1.16E-02 1.43E-02 2.02E-02 3.09E-02 4.89E-02

Liver 6.98E-03 8.92E-03 1.39E-02 2.09E-02 3.64E-02

Lungs 8.08E-03 1.03E-02 1.57E-02 2.33E-02 4.09E-02

Pancreas 2.35E-02 2.83E-02 4.29E-02 6.29E-02 1.01E-01

Prostate 1.29E-02 1.76E-02 4.66E-02 3.83E-02 6.52E-02

Salivary Glands 4.90E-03 6.32E-03 1.03E-02 1.65E-02 3.00E-02

Red Marrow 5.79E-03 6.96E-03 9.58E-03 1.35E-02 2.42E-02

Osteogenic Cells 9.80E-03 1.13E-02 1.60E-02 2.31E-02 4.19E-02

Spleen 1.07E-02 1.38E-02 2.15E-02 3.21E-02 5.57E-02

Testes 5.20E-03 6.64E-03 1.26E-02 1.59E-02 2.88E-02

Thymus 7.15E-03 1.04E-02 1.68E-02 3.05E-02 7.00E-02

Thyroid 6.22E-01 1.00E+00 1.47E+00 3.27E+00 5.81E+00

Urinary Bladder Wall 8.94E-02 1.09E-01 1.62E-01 2.38E-01 4.29E-01

Total Body 6.59E-03 8.16E-03 1.31E-02 2.06E-02 3.66E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.45E-02 1.55E-02 2.31E-02 3.47E-02 5.84E-02

Brain 4.88E-03 5.05E-03 8.23E-03 1.34E-02 2.37E-02

Breasts 4.79E-03 5.23E-03 ----- ----- -----

Esophagus 1.45E-02 1.67E-02 2.55E-02 3.58E-02 5.09E-02

Eyes 4.89E-03 5.10E-03 8.27E-03 1.35E-02 2.39E-02

Gallbladder Wall 1.14E-02 1.23E-02 1.87E-02 2.82E-02 4.35E-02

Left colon 1.40E-02 1.54E-02 2.43E-02 3.67E-02 6.29E-02

Small Intestine 5.82E-02 6.03E-02 9.38E-02 1.34E-01 1.86E-01

Stomach Wall 8.81E-02 9.90E-02 1.53E-01 2.11E-01 2.77E-01

Right colon 1.03E-02 1.11E-02 1.55E-02 2.38E-02 3.93E-02

Rectum 2.04E-02 2.70E-02 3.65E-02 5.09E-02 8.42E-02

Heart Wall 9.00E-03 9.43E-03 1.43E-02 2.16E-02 3.75E-02

Kidneys 1.41E-02 1.54E-02 2.13E-02 3.27E-02 5.21E-02

Liver 8.15E-03 8.60E-03 1.32E-02 2.01E-02 3.60E-02

Lungs 8.93E-03 9.26E-03 1.38E-02 2.10E-02 3.65E-02

Ovaries 1.35E-02 1.63E-02 2.25E-02 3.70E-02 6.90E-02

Pancreas 1.94E-02 2.15E-02 3.18E-02 4.80E-02 7.22E-02

Salivary Glands 5.60E-03 6.53E-03 1.04E-02 1.65E-02 2.99E-02

Red Marrow 7.09E-03 6.68E-03 7.60E-03 9.56E-03 1.49E-02

Osteogenic Cells 1.16E-02 1.12E-02 1.17E-02 1.28E-02 1.60E-02

Spleen 1.69E-02 1.84E-02 2.72E-02 3.98E-02 6.43E-02

Thymus 1.08E-02 1.28E-02 2.39E-02 4.12E-02 7.39E-02

Thyroid 7.23E-01 1.00E+00 1.48E+00 3.24E+00 5.88E+00

Urinary Bladder Wall 9.53E-02 9.70E-02 1.40E-01 2.10E-01 3.75E-01

Uterus 2.26E-02 2.90E-02 4.74E-02 6.76E-02 1.06E-01

Total Body 8.87E-03 8.44E-03 1.30E-02 2.05E-02 3.65E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.23E-02 1.43E-02 2.12E-02 3.17E-02 5.36E-02

Brain 4.40E-03 5.00E-03 8.23E-03 1.34E-02 2.37E-02

Breasts 4.79E-03 5.23E-03 ----- ----- -----

Esophagus 1.48E-02 1.83E-02 2.83E-02 4.38E-02 6.64E-02

Eyes 4.38E-03 5.01E-03 8.22E-03 1.35E-02 2.39E-02

Gallbladder Wall 9.47E-03 1.10E-02 1.68E-02 2.56E-02 3.93E-02

Left colon 1.41E-02 1.63E-02 2.44E-02 3.64E-02 6.19E-02

Small Intestine 5.33E-02 5.97E-02 9.36E-02 1.34E-01 1.85E-01

Stomach Wall 8.36E-02 9.79E-02 1.51E-01 2.10E-01 2.74E-01

Right colon 9.25E-03 1.15E-02 1.61E-02 2.46E-02 4.07E-02

Rectum 1.64E-02 2.14E-02 3.13E-02 4.48E-02 7.53E-02

Heart Wall 9.18E-03 1.07E-02 1.64E-02 2.43E-02 4.20E-02

Kidneys 1.28E-02 1.48E-02 2.07E-02 3.18E-02 5.05E-02

Liver 7.57E-03 8.76E-03 1.35E-02 2.05E-02 3.62E-02

Lungs 8.50E-03 9.76E-03 1.47E-02 2.21E-02 3.87E-02

Ovaries 1.35E-02 1.63E-02 2.25E-02 3.70E-02 6.90E-02

Pancreas 2.14E-02 2.49E-02 3.74E-02 5.54E-02 8.66E-02

Prostate 1.29E-02 1.76E-02 4.66E-02 3.83E-02 6.52E-02

Salivary Glands 5.25E-03 6.43E-03 1.03E-02 1.65E-02 3.00E-02

Red Marrow 6.44E-03 6.82E-03 8.59E-03 1.15E-02 1.95E-02

Osteogenic Cells 1.07E-02 1.12E-02 1.39E-02 1.79E-02 2.89E-02

Spleen 1.38E-02 1.61E-02 2.44E-02 3.60E-02 6.00E-02

Testes 5.20E-03 6.64E-03 1.26E-02 1.59E-02 2.88E-02

Thymus 9.00E-03 1.16E-02 2.03E-02 3.59E-02 7.19E-02

Thyroid 6.72E-01 1.00E+00 1.48E+00 3.26E+00 5.85E+00

Urinary Bladder Wall 9.23E-02 1.03E-01 1.51E-01 2.24E-01 4.02E-01

Uterus 2.26E-02 2.90E-02 4.74E-02 6.76E-02 1.06E-01

Total Body 7.73E-03 8.30E-03 1.30E-02 2.05E-02 3.65E-02

Effective Dose 4.94E-02 6.66E-02 9.86E-02 1.89E-01 3.25E-01

Radiation Dose Estimates (mSv/MBq) for 123I Iodide, 15% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.01E-02 1.33E-02 1.94E-02 2.90E-02 4.93E-02

Brain 4.18E-03 5.31E-03 8.84E-03 1.43E-02 2.51E-02

Esophagus 2.72E-02 3.62E-02 5.69E-02 1.01E-01 1.53E-01

Eyes 4.06E-03 5.20E-03 8.64E-03 1.41E-02 2.52E-02

Gallbladder Wall 7.64E-03 9.82E-03 1.51E-02 2.34E-02 3.58E-02

Left colon 1.42E-02 1.74E-02 2.48E-02 3.65E-02 6.13E-02

Small Intestine 4.86E-02 5.89E-02 9.33E-02 1.33E-01 1.84E-01

Stomach Wall 7.93E-02 9.73E-02 1.51E-01 2.09E-01 2.73E-01

Right colon 8.17E-03 1.19E-02 1.68E-02 2.55E-02 4.24E-02

Rectum 1.18E-02 1.51E-02 2.47E-02 3.68E-02 6.32E-02

Heart Wall 1.03E-02 1.32E-02 2.01E-02 2.94E-02 5.05E-02

Kidneys 1.12E-02 1.38E-02 1.95E-02 2.99E-02 4.75E-02

Liver 7.24E-03 9.26E-03 1.44E-02 2.18E-02 3.78E-02

Lungs 1.06E-02 1.35E-02 2.06E-02 2.99E-02 5.26E-02

Pancreas 2.37E-02 2.86E-02 4.33E-02 6.34E-02 1.02E-01

Prostate 1.22E-02 1.66E-02 4.28E-02 3.63E-02 6.19E-02

Salivary Glands 6.02E-03 7.85E-03 1.28E-02 2.01E-02 3.62E-02

Red Marrow 6.65E-03 7.87E-03 1.05E-02 1.44E-02 2.51E-02

Osteogenic Cells 1.09E-02 1.23E-02 1.72E-02 2.44E-02 4.32E-02

Spleen 1.08E-02 1.40E-02 2.19E-02 3.26E-02 5.65E-02

Testes 5.06E-03 6.45E-03 1.20E-02 1.55E-02 2.81E-02

Thymus 1.15E-02 1.81E-02 3.05E-02 5.95E-02 1.52E-01

Thyroid 1.88E+00 3.01E+00 4.43E+00 9.79E+00 1.74E+01

Urinary Bladder Wall 8.00E-02 9.81E-02 1.45E-01 2.14E-01 3.85E-01

Total Body 7.28E-03 9.02E-03 1.45E-02 2.28E-02 4.04E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.46E-02 1.56E-02 2.33E-02 3.50E-02 5.89E-02

Brain 5.23E-03 5.43E-03 8.87E-03 1.44E-02 2.50E-02

Breasts 5.40E-03 6.01E-03 ----- ----- -----

Esophagus 2.99E-02 3.38E-02 5.07E-02 6.66E-02 8.09E-02

Eyes 5.25E-03 5.57E-03 8.97E-03 1.46E-02 2.57E-02

Gallbladder Wall 1.15E-02 1.24E-02 1.88E-02 2.83E-02 4.36E-02

Left colon 1.39E-02 1.53E-02 2.41E-02 3.64E-02 6.24E-02

Small Intestine 5.85E-02 6.01E-02 9.36E-02 1.34E-01 1.86E-01

Stomach Wall 8.84E-02 9.92E-02 1.53E-01 2.12E-01 2.78E-01

Right colon 1.03E-02 1.11E-02 1.54E-02 2.38E-02 3.92E-02

Rectum 1.90E-02 2.49E-02 3.38E-02 4.73E-02 7.85E-02

Heart Wall 1.03E-02 1.08E-02 1.64E-02 2.46E-02 4.23E-02

Kidneys 1.36E-02 1.48E-02 2.06E-02 3.17E-02 5.05E-02

Liver 8.44E-03 8.90E-03 1.36E-02 2.08E-02 3.72E-02

Lungs 1.18E-02 1.22E-02 1.82E-02 2.74E-02 4.63E-02

Ovaries 1.31E-02 1.55E-02 2.16E-02 3.54E-02 7.00E-02

Pancreas 1.95E-02 2.16E-02 3.20E-02 4.83E-02 7.26E-02

Salivary Glands 7.25E-03 8.36E-03 1.31E-02 2.04E-02 3.64E-02

Red Marrow 8.38E-03 7.58E-03 8.45E-03 1.04E-02 1.57E-02

Osteogenic Cells 1.32E-02 1.23E-02 1.28E-02 1.41E-02 1.73E-02

Spleen 1.70E-02 1.86E-02 2.74E-02 4.01E-02 6.49E-02

Thymus 2.10E-02 2.63E-02 5.34E-02 9.46E-02 1.69E-01

Thyroid 2.19E+00 3.02E+00 4.45E+00 9.72E+00 1.76E+01

Urinary Bladder Wall 8.54E-02 8.70E-02 1.26E-01 1.88E-01 3.37E-01

Uterus 2.12E-02 2.69E-02 4.40E-02 6.30E-02 9.90E-02

Total Body 9.90E-03 9.38E-03 1.45E-02 2.26E-02 4.01E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.23E-02 1.45E-02 2.14E-02 2.28E-02 5.41E-02

Brain 4.70E-03 5.37E-03 8.85E-03 1.42E-02 2.51E-02

Breasts 5.40E-03 6.01E-03 ----- ----- -----

Esophagus 2.85E-02 3.50E-02 5.38E-02 8.10E-02 1.17E-01

Eyes 4.66E-03 5.38E-03 8.80E-03 1.43E-02 2.54E-02

Gallbladder Wall 9.55E-03 1.11E-02 1.69E-02 2.03E-02 3.97E-02

Left colon 1.41E-02 1.63E-02 2.45E-02 2.75E-02 6.19E-02

Small Intestine 5.36E-02 5.95E-02 9.34E-02 7.60E-02 1.85E-01

Stomach Wall 8.38E-02 9.82E-02 1.52E-01 1.12E-01 2.75E-01

Right colon 9.26E-03 1.15E-02 1.61E-02 2.11E-02 4.08E-02

Rectum 1.54E-02 2.00E-02 2.93E-02 4.01E-02 7.09E-02

Heart Wall 1.03E-02 1.20E-02 1.83E-02 2.39E-02 4.64E-02

Kidneys 1.24E-02 1.43E-02 2.01E-02 2.65E-02 4.90E-02

Liver 7.84E-03 9.08E-03 1.40E-02 1.86E-02 3.75E-02

Lungs 1.12E-02 1.28E-02 1.94E-02 2.64E-02 4.94E-02

Ovaries 1.31E-02 1.55E-02 2.16E-02 2.81E-02 7.00E-02

Pancreas 2.16E-02 2.51E-02 3.77E-02 4.00E-02 8.74E-02

Prostate 1.22E-02 1.66E-02 4.28E-02 3.63E-02 6.19E-02

Salivary Glands 6.64E-03 8.11E-03 1.29E-02 2.01E-02 3.63E-02

Red Marrow 7.51E-03 7.73E-03 9.46E-03 1.20E-02 2.04E-02

Osteogenic Cells 1.21E-02 1.23E-02 1.50E-02 1.87E-02 3.03E-02

Spleen 1.39E-02 1.63E-02 2.46E-02 2.40E-02 6.07E-02

Testes 5.06E-03 6.45E-03 1.20E-02 1.55E-02 2.81E-02

Thymus 1.62E-02 2.22E-02 4.20E-02 7.65E-02 1.61E-01

Thyroid 2.03E+00 3.02E+00 4.44E+00 9.78E+00 1.75E+01

Urinary Bladder Wall 8.27E-02 9.26E-02 1.35E-01 2.00E-01 3.61E-01

Uterus 2.12E-02 2.69E-02 4.40E-02 5.28E-02 9.90E-02

Total Body 8.59E-03 9.20E-03 1.45E-02 2.06E-02 4.03E-02

Effective Dose 1.07E-01 1.52E-01 2.24E-01 4.50E-01 8.17E-01

Radiation Dose Estimates (mSv/MBq) for 123I Iodide, 25% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.01E-02 1.34E-02 1.96E-02 2.94E-02 4.98E-02

Brain 4.44E-03 5.66E-03 9.44E-03 1.51E-02 2.64E-02

Esophagus 3.92E-02 5.25E-02 8.26E-02 1.51E-01 2.26E-01

Eyes 4.24E-03 5.47E-03 9.10E-03 1.48E-02 2.65E-02

Gallbladder Wall 7.74E-03 9.97E-03 1.53E-02 2.38E-02 3.66E-02

Left colon 1.42E-02 1.75E-02 2.49E-02 3.67E-02 6.17E-02

Small Intestine 4.82E-02 5.88E-02 9.31E-02 1.33E-01 1.83E-01

Stomach Wall 7.96E-02 9.77E-02 1.52E-01 2.10E-01 2.75E-01

Right colon 8.13E-03 1.19E-02 1.68E-02 2.57E-02 4.27E-02

Rectum 1.13E-02 1.45E-02 2.36E-02 3.52E-02 6.06E-02

Heart Wall 1.12E-02 1.43E-02 2.19E-02 3.18E-02 5.46E-02

Kidneys 1.08E-02 1.33E-02 1.90E-02 2.91E-02 4.63E-02

Liver 7.49E-03 9.60E-03 1.50E-02 2.26E-02 3.92E-02

Lungs 1.32E-02 1.68E-02 2.55E-02 3.67E-02 6.44E-02

Pancreas 2.38E-02 2.88E-02 4.37E-02 6.40E-02 1.03E-01

Prostate 1.15E-02 1.58E-02 3.95E-02 3.45E-02 5.92E-02

Salivary Glands 7.12E-03 9.38E-03 1.53E-02 2.38E-02 4.24E-02

Red Marrow 7.50E-03 8.80E-03 1.14E-02 1.53E-02 2.60E-02

Osteogenic Cells 1.21E-02 1.34E-02 1.84E-02 2.58E-02 4.46E-02

Spleen 1.10E-02 1.42E-02 2.22E-02 3.31E-02 5.74E-02

Testes 4.93E-03 6.29E-03 1.15E-02 1.52E-02 2.75E-02

Thymus 1.57E-02 2.58E-02 4.41E-02 8.88E-02 2.36E-01

Thyroid 3.12E+00 5.03E+00 7.38E+00 1.64E+01 2.91E+01

Urinary Bladder Wall 7.19E-02 8.84E-02 1.31E-01 1.93E-01 3.47E-01

Total Body 7.96E-03 9.90E-03 1.59E-02 2.51E-02 4.43E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.47E-02 1.58E-02 2.36E-02 3.54E-02 5.95E-02

Brain 5.57E-03 5.82E-03 9.50E-03 1.53E-02 2.64E-02

Breasts 6.01E-03 6.80E-03 ----- ----- -----

Esophagus 4.51E-02 5.10E-02 7.58E-02 9.78E-02 1.11E-01

Eyes 5.61E-03 6.03E-03 9.66E-03 1.58E-02 2.75E-02

Gallbladder Wall 1.15E-02 1.24E-02 1.88E-02 2.84E-02 4.38E-02

Left colon 1.39E-02 1.52E-02 2.40E-02 3.62E-02 6.21E-02

Small Intestine 5.80E-02 6.00E-02 9.34E-02 1.33E-01 1.86E-01

Stomach Wall 8.86E-02 9.94E-02 1.53E-01 2.13E-01 2.79E-01

Right colon 1.03E-02 1.11E-02 1.54E-02 2.37E-02 3.92E-02

Rectum 1.77E-02 2.30E-02 3.15E-02 4.42E-02 7.37E-02

Heart Wall 1.16E-02 1.23E-02 1.85E-02 2.77E-02 4.71E-02

Kidneys 1.32E-02 1.43E-02 2.00E-02 3.08E-02 4.93E-02

Liver 8.71E-03 9.19E-03 1.41E-02 2.15E-02 3.84E-02

Lungs 1.47E-02 1.51E-02 2.25E-02 3.38E-02 5.62E-02

Ovaries 1.26E-02 1.49E-02 2.09E-02 3.41E-02 7.15E-02

Pancreas 1.96E-02 2.18E-02 3.22E-02 4.87E-02 7.31E-02

Salivary Glands 8.88E-03 1.02E-02 1.58E-02 2.43E-02 4.29E-02

Red Marrow 9.66E-03 8.49E-03 9.30E-03 1.12E-02 1.66E-02

Osteogenic Cells 1.48E-02 1.33E-02 1.40E-02 1.54E-02 1.87E-02

Spleen 1.71E-02 1.87E-02 2.76E-02 4.04E-02 6.54E-02

Thymus 3.11E-02 3.99E-02 8.28E-02 1.49E-01 2.65E-01

Thyroid 3.63E+00 5.04E+00 7.40E+00 1.63E+01 2.95E+01

Urinary Bladder Wall 7.70E-02 7.85E-02 1.13E-01 1.70E-01 3.04E-01

Uterus 2.00E-02 2.52E-02 4.12E-02 5.90E-02 9.31E-02

Total Body 1.09E-02 1.03E-02 1.59E-02 2.49E-02 4.39E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.24E-02 1.46E-02 2.16E-02 3.24E-02 4.00E-02

Brain 5.01E-03 5.74E-03 9.47E-03 1.52E-02 2.62E-02

Breasts 6.01E-03 6.80E-03 ----- ----- -----

Esophagus 4.21E-02 5.17E-02 7.92E-02 1.24E-01 1.64E-01

Eyes 4.93E-03 5.75E-03 9.38E-03 1.53E-02 2.68E-02

Gallbladder Wall 9.61E-03 1.12E-02 1.71E-02 2.61E-02 3.08E-02

Left colon 1.40E-02 1.63E-02 2.45E-02 3.65E-02 4.75E-02

Small Intestine 5.31E-02 5.94E-02 9.33E-02 1.33E-01 1.08E-01

Stomach Wall 8.41E-02 9.86E-02 1.52E-01 2.11E-01 1.51E-01

Right colon 9.22E-03 1.15E-02 1.61E-02 2.47E-02 3.55E-02

Rectum 1.45E-02 1.88E-02 2.75E-02 3.97E-02 6.36E-02

Heart Wall 1.14E-02 1.33E-02 2.02E-02 2.98E-02 4.59E-02

Kidneys 1.20E-02 1.38E-02 1.95E-02 2.99E-02 4.09E-02

Liver 8.10E-03 9.40E-03 1.45E-02 2.20E-02 3.40E-02

Lungs 1.39E-02 1.59E-02 2.40E-02 3.53E-02 5.67E-02

Ovaries 1.26E-02 1.49E-02 2.09E-02 3.41E-02 6.08E-02

Pancreas 2.17E-02 2.53E-02 3.80E-02 5.63E-02 6.66E-02

Prostate 1.15E-02 1.58E-02 3.95E-02 3.45E-02 5.92E-02

Salivary Glands 8.00E-03 9.79E-03 1.56E-02 2.40E-02 4.23E-02

Red Marrow 8.58E-03 8.65E-03 1.03E-02 1.32E-02 2.09E-02

Osteogenic Cells 1.34E-02 1.34E-02 1.62E-02 2.06E-02 3.11E-02

Spleen 1.40E-02 1.65E-02 2.49E-02 3.68E-02 4.28E-02

Testes 4.93E-03 6.29E-03 1.15E-02 1.52E-02 2.75E-02

Thymus 2.34E-02 3.29E-02 6.35E-02 1.19E-01 2.49E-01

Thyroid 3.38E+00 5.03E+00 7.39E+00 1.63E+01 2.93E+01

Urinary Bladder Wall 7.44E-02 8.34E-02 1.22E-01 1.81E-01 3.23E-01

Uterus 2.00E-02 2.52E-02 4.12E-02 5.90E-02 7.82E-02

Total Body 9.44E-03 1.01E-02 1.59E-02 2.50E-02 4.05E-02

Effective Dose 1.65E-01 2.38E-01 3.50E-01 7.42E-01 1.30E+00

Radiation Dose Estimates (mSv/MBq) for 123I Iodide, 35% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.02E-02 1.35E-02 1.98E-02 2.97E-02 5.02E-02

Brain 4.70E-03 6.01E-03 1.00E-02 1.60E-02 2.77E-02

Esophagus 5.13E-02 6.88E-02 1.09E-01 2.00E-01 2.96E-01

Eyes 4.42E-03 5.74E-03 9.56E-03 1.55E-02 2.77E-02

Gallbladder Wall 7.85E-03 1.01E-02 1.55E-02 2.42E-02 3.74E-02

Left colon 1.42E-02 1.76E-02 2.51E-02 3.70E-02 6.20E-02

Small Intestine 4.81E-02 5.87E-02 9.29E-02 1.32E-01 1.83E-01

Stomach Wall 8.00E-02 9.81E-02 1.52E-01 2.11E-01 2.76E-01

Right colon 8.11E-03 1.19E-02 1.68E-02 2.58E-02 4.29E-02

Rectum 1.08E-02 1.37E-02 2.23E-02 3.33E-02 5.75E-02

Heart Wall 1.21E-02 1.55E-02 2.36E-02 3.42E-02 5.86E-02

Kidneys 1.04E-02 1.28E-02 1.84E-02 2.81E-02 4.50E-02

Liver 7.74E-03 9.94E-03 1.55E-02 2.34E-02 4.06E-02

Lungs 1.57E-02 2.00E-02 3.04E-02 4.33E-02 7.59E-02

Pancreas 2.40E-02 2.90E-02 4.42E-02 6.45E-02 1.04E-01

Prostate 1.07E-02 1.48E-02 3.58E-02 3.25E-02 5.60E-02

Salivary Glands 8.24E-03 1.09E-02 1.78E-02 2.74E-02 4.85E-02

Red Marrow 8.35E-03 9.71E-03 1.23E-02 1.61E-02 2.69E-02

Osteogenic Cells 1.32E-02 1.45E-02 1.96E-02 2.72E-02 4.59E-02

Spleen 1.11E-02 1.44E-02 2.25E-02 3.36E-02 5.82E-02

Testes 4.79E-03 6.10E-03 1.10E-02 1.48E-02 2.68E-02

Thymus 2.00E-02 3.36E-02 5.79E-02 1.18E-01 3.17E-01

Thyroid 4.37E+00 7.05E+00 1.03E+01 2.29E+01 4.06E+01

Urinary Bladder Wall 6.26E-02 7.71E-02 1.14E-01 1.68E-01 3.03E-01

Total Body 8.65E-03 1.08E-02 1.74E-02 2.73E-02 4.80E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.47E-02 1.60E-02 2.38E-02 3.57E-02 6.00E-02

Brain 5.92E-03 6.20E-03 1.01E-02 1.62E-02 2.77E-02

Breasts 6.61E-03 7.59E-03 ----- ----- -----

Esophagus 6.04E-02 6.81E-02 1.01E-01 1.28E-01 1.41E-01

Eyes 5.98E-03 6.50E-03 1.04E-02 1.69E-02 2.92E-02

Gallbladder Wall 1.15E-02 1.24E-02 1.89E-02 2.84E-02 4.39E-02

Left colon 1.38E-02 1.51E-02 2.39E-02 3.60E-02 6.16E-02

Small Intestine 5.78E-02 5.98E-02 9.31E-02 1.33E-01 1.85E-01

Stomach Wall 8.88E-02 9.96E-02 1.54E-01 2.13E-01 2.80E-01

Right colon 1.03E-02 1.11E-02 1.53E-02 2.36E-02 3.91E-02

Rectum 1.63E-02 2.09E-02 2.88E-02 4.06E-02 6.81E-02

Heart Wall 1.29E-02 1.37E-02 2.06E-02 3.07E-02 5.18E-02

Kidneys 1.27E-02 1.38E-02 1.94E-02 2.98E-02 4.78E-02

Liver 9.00E-03 9.49E-03 1.45E-02 2.22E-02 3.96E-02

Lungs 1.75E-02 1.80E-02 2.69E-02 4.02E-02 6.59E-02

Ovaries 1.21E-02 1.42E-02 2.00E-02 3.25E-02 7.25E-02

Pancreas 1.97E-02 2.19E-02 3.24E-02 4.90E-02 7.36E-02

Salivary Glands 1.05E-02 1.20E-02 1.86E-02 2.81E-02 4.93E-02

Red Marrow 1.09E-02 9.40E-03 1.02E-02 1.20E-02 1.74E-02

Osteogenic Cells 1.63E-02 1.44E-02 1.51E-02 1.67E-02 2.00E-02

Spleen 1.72E-02 1.88E-02 2.78E-02 4.08E-02 6.60E-02

Thymus 4.12E-02 5.35E-02 1.12E-01 2.02E-01 3.58E-01

Thyroid 5.09E+00 7.06E+00 1.04E+01 2.27E+01 4.10E+01

Urinary Bladder Wall 6.72E-02 6.86E-02 9.92E-02 1.49E-01 2.66E-01

Uterus 1.86E-02 2.31E-02 3.78E-02 5.44E-02 8.62E-02

Total Body 1.19E-02 1.13E-02 1.74E-02 2.70E-02 4.76E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.25E-02 1.47E-02 2.18E-02 3.27E-02 5.51E-02

Brain 5.31E-03 6.11E-03 1.01E-02 1.61E-02 2.77E-02

Breasts 6.61E-03 7.59E-03 ----- ----- -----

Esophagus 5.58E-02 6.85E-02 1.05E-01 1.64E-01 2.19E-01

Eyes 5.20E-03 6.12E-03 9.96E-03 1.62E-02 2.84E-02

Gallbladder Wall 9.67E-03 1.13E-02 1.72E-02 2.63E-02 4.06E-02

Left colon 1.40E-02 1.63E-02 2.45E-02 3.65E-02 6.18E-02

Small Intestine 5.30E-02 5.93E-02 9.30E-02 1.33E-01 1.84E-01

Stomach Wall 8.44E-02 9.89E-02 1.53E-01 2.12E-01 2.78E-01

Right colon 9.20E-03 1.15E-02 1.61E-02 2.47E-02 4.10E-02

Rectum 1.35E-02 1.73E-02 2.55E-02 3.69E-02 6.28E-02

Heart Wall 1.25E-02 1.46E-02 2.21E-02 3.25E-02 5.52E-02

Kidneys 1.16E-02 1.33E-02 1.89E-02 2.90E-02 4.64E-02

Liver 8.37E-03 9.72E-03 1.50E-02 2.28E-02 4.01E-02

Lungs 1.66E-02 1.90E-02 2.86E-02 4.18E-02 7.09E-02

Ovaries 1.21E-02 1.42E-02 2.00E-02 3.25E-02 7.25E-02

Pancreas 2.18E-02 2.54E-02 3.83E-02 5.68E-02 8.90E-02

Prostate 1.07E-02 1.48E-02 3.58E-02 3.25E-02 5.60E-02

Salivary Glands 9.38E-03 1.15E-02 1.82E-02 2.77E-02 4.89E-02

Red Marrow 9.64E-03 9.56E-03 1.12E-02 1.41E-02 2.22E-02

Osteogenic Cells 1.48E-02 1.44E-02 1.74E-02 2.19E-02 3.29E-02

Spleen 1.42E-02 1.66E-02 2.52E-02 3.72E-02 6.21E-02

Testes 4.79E-03 6.10E-03 1.10E-02 1.48E-02 2.68E-02

Thymus 3.06E-02 4.35E-02 8.52E-02 1.60E-01 3.38E-01

Thyroid 4.73E+00 7.05E+00 1.04E+01 2.28E+01 4.08E+01

Urinary Bladder Wall 6.49E-02 7.29E-02 1.07E-01 1.58E-01 2.84E-01

Uterus 1.86E-02 2.31E-02 3.78E-02 5.44E-02 8.62E-02

Total Body 1.03E-02 1.10E-02 1.74E-02 2.71E-02 4.78E-02

Effective Dose 2.22E-01 3.24E-01 4.76E-01 1.02E+00 1.80E+00

Radiation Dose Estimates (mSv/MBq) for 123I Iodide, 45% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.02E-02 1.35E-02 1.99E-02 3.00E-02 5.06E-02

Brain 4.96E-03 6.36E-03 1.06E-02 1.68E-02 2.90E-02

Esophagus 6.34E-02 8.49E-02 1.34E-01 2.49E-01 3.68E-01

Eyes 4.60E-03 6.02E-03 1.00E-02 1.62E-02 2.90E-02

Gallbladder Wall 7.96E-03 1.02E-02 1.57E-02 2.46E-02 3.81E-02

Left colon 1.43E-02 1.77E-02 2.52E-02 3.73E-02 6.24E-02

Small Intestine 4.80E-02 5.86E-02 9.27E-02 1.32E-01 1.83E-01

Stomach Wall 8.03E-02 9.86E-02 1.53E-01 2.12E-01 2.78E-01

Right colon 8.08E-03 1.19E-02 1.68E-02 2.59E-02 4.32E-02

Rectum 1.02E-02 1.30E-02 2.10E-02 3.14E-02 5.43E-02

Heart Wall 1.29E-02 1.67E-02 2.54E-02 3.67E-02 6.27E-02

Kidneys 9.78E-03 1.21E-02 1.75E-02 2.67E-02 4.30E-02

Liver 7.99E-03 1.03E-02 1.61E-02 2.42E-02 4.20E-02

Lungs 1.83E-02 2.33E-02 3.52E-02 5.00E-02 8.75E-02

Pancreas 2.42E-02 2.93E-02 4.46E-02 6.51E-02 1.05E-01

Prostate 9.93E-03 1.38E-02 3.20E-02 3.05E-02 5.28E-02

Salivary Glands 9.35E-03 1.24E-02 2.03E-02 3.10E-02 5.46E-02

Red Marrow 9.20E-03 1.06E-02 1.32E-02 1.70E-02 2.78E-02

Osteogenic Cells 1.43E-02 1.56E-02 2.08E-02 2.86E-02 4.72E-02

Spleen 1.13E-02 1.46E-02 2.29E-02 3.41E-02 5.90E-02

Testes 4.64E-03 5.91E-03 1.04E-02 1.43E-02 2.61E-02

Thymus 2.43E-02 4.12E-02 7.15E-02 1.47E-01 3.99E-01

Thyroid 5.63E+00 9.05E+00 1.33E+01 2.94E+01 5.21E+01

Urinary Bladder Wall 5.32E-02 6.57E-02 9.74E-02 1.44E-01 2.59E-01

Total Body 9.33E-03 1.16E-02 1.88E-02 2.95E-02 5.18E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.48E-02 1.61E-02 2.40E-02 3.60E-02 6.05E-02

Brain 6.27E-03 6.58E-03 1.08E-02 1.72E-02 2.91E-02

Breasts 7.22E-03 8.37E-03 ----- ----- -----

Esophagus 7.57E-02 8.52E-02 1.26E-01 1.59E-01 1.71E-01

Eyes 6.34E-03 6.97E-03 1.11E-02 1.80E-02 3.10E-02

Gallbladder Wall 1.15E-02 1.25E-02 1.89E-02 2.85E-02 4.40E-02

Left colon 1.37E-02 1.49E-02 2.37E-02 3.57E-02 6.11E-02

Small Intestine 5.77E-02 5.97E-02 9.29E-02 1.33E-01 1.85E-01

Stomach Wall 8.90E-02 9.99E-02 1.54E-01 2.14E-01 2.80E-01

Right colon 1.03E-02 1.11E-02 1.53E-02 2.36E-02 3.90E-02

Rectum 1.48E-02 1.87E-02 2.60E-02 3.69E-02 6.25E-02

Heart Wall 1.42E-02 1.51E-02 2.27E-02 3.37E-02 5.65E-02

Kidneys 1.21E-02 1.31E-02 1.85E-02 2.84E-02 4.57E-02

Liver 9.27E-03 9.78E-03 1.50E-02 2.28E-02 4.07E-02

Lungs 2.04E-02 2.09E-02 3.12E-02 4.66E-02 7.57E-02

Ovaries 1.16E-02 1.34E-02 1.92E-02 3.10E-02 7.35E-02

Pancreas 1.98E-02 2.20E-02 3.26E-02 4.93E-02 7.40E-02

Salivary Glands 1.22E-02 1.39E-02 2.13E-02 3.19E-02 5.57E-02

Red Marrow 1.22E-02 1.03E-02 1.10E-02 1.28E-02 1.83E-02

Osteogenic Cells 1.79E-02 1.54E-02 1.63E-02 1.80E-02 2.14E-02

Spleen 1.73E-02 1.89E-02 2.80E-02 4.10E-02 6.65E-02

Thymus 5.13E-02 6.69E-02 1.42E-01 2.55E-01 4.53E-01

Thyroid 6.54E+00 9.06E+00 1.33E+01 2.92E+01 5.27E+01

Urinary Bladder Wall 5.73E-02 5.86E-02 8.47E-02 1.27E-01 2.27E-01

Uterus 1.72E-02 2.11E-02 3.45E-02 4.98E-02 7.92E-02

Total Body 1.29E-02 1.22E-02 1.88E-02 2.92E-02 5.12E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.25E-02 1.48E-02 2.19E-02 3.30E-02 5.55E-02

Brain 5.62E-03 6.47E-03 1.07E-02 1.70E-02 2.91E-02

Breasts 7.22E-03 8.37E-03 ----- 0.00E+00 0.00E+00

Esophagus 6.95E-02 8.51E-02 1.30E-01 2.04E-01 2.69E-01

Eyes 5.47E-03 6.49E-03 1.05E-02 1.71E-02 3.00E-02

Gallbladder Wall 9.73E-03 1.14E-02 1.73E-02 2.66E-02 4.11E-02

Left colon 1.40E-02 1.63E-02 2.45E-02 3.65E-02 6.17E-02

Small Intestine 5.29E-02 5.91E-02 9.28E-02 1.32E-01 1.84E-01

Stomach Wall 8.46E-02 9.92E-02 1.54E-01 2.13E-01 2.79E-01

Right colon 9.18E-03 1.15E-02 1.61E-02 2.47E-02 4.11E-02

Rectum 1.25E-02 1.59E-02 2.35E-02 3.42E-02 5.84E-02

Heart Wall 1.36E-02 1.59E-02 2.40E-02 3.52E-02 5.96E-02

Kidneys 1.09E-02 1.26E-02 1.80E-02 2.76E-02 4.44E-02

Liver 8.63E-03 1.00E-02 1.55E-02 2.35E-02 4.14E-02

Lungs 1.93E-02 2.21E-02 3.32E-02 4.83E-02 8.16E-02

Ovaries 1.16E-02 1.34E-02 1.92E-02 3.10E-02 7.35E-02

Pancreas 2.20E-02 2.56E-02 3.86E-02 5.72E-02 8.98E-02

Prostate 9.93E-03 1.38E-02 3.20E-02 3.05E-02 5.28E-02

Salivary Glands 1.08E-02 1.31E-02 2.08E-02 3.14E-02 5.51E-02

Red Marrow 1.07E-02 1.05E-02 1.21E-02 1.49E-02 2.30E-02

Osteogenic Cells 1.61E-02 1.55E-02 1.86E-02 2.33E-02 3.43E-02

Spleen 1.43E-02 1.68E-02 2.54E-02 3.76E-02 6.28E-02

Testes 4.64E-03 5.91E-03 1.04E-02 1.43E-02 2.61E-02

Thymus 3.78E-02 5.41E-02 1.07E-01 2.01E-01 4.26E-01

Thyroid 6.08E+00 9.05E+00 1.33E+01 2.93E+01 5.24E+01

Urinary Bladder Wall 5.52E-02 6.22E-02 9.10E-02 1.35E-01 2.43E-01

Uterus 1.72E-02 2.11E-02 3.45E-02 4.98E-02 7.92E-02

Total Body 1.11E-02 1.19E-02 1.88E-02 2.93E-02 5.15E-02

Effective Dose 2.80E-01 4.08E-01 6.01E-01 1.29E+00 2.29E+00

Radiation Dose Estimates (mSv/MBq) for 123I Iodide, 55% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.03E-02 1.36E-02 2.01E-02 3.03E-02 5.11E-02

Brain 5.22E-03 6.71E-03 1.12E-02 1.77E-02 3.04E-02

Esophagus 7.55E-02 1.01E-01 1.60E-01 2.99E-01 4.39E-01

Eyes 4.78E-03 6.29E-03 1.05E-02 1.69E-02 3.02E-02

Gallbladder Wall 8.07E-03 1.04E-02 1.60E-02 2.51E-02 3.89E-02

Left colon 1.43E-02 1.78E-02 2.54E-02 3.75E-02 6.28E-02

Small Intestine 4.79E-02 5.85E-02 9.26E-02 1.32E-01 1.82E-01

Stomach Wall 8.06E-02 9.90E-02 1.54E-01 2.13E-01 2.79E-01

Right colon 8.06E-03 1.19E-02 1.69E-02 2.60E-02 4.35E-02

Rectum 9.75E-03 1.24E-02 1.99E-02 2.97E-02 5.17E-02

Heart Wall 1.38E-02 1.78E-02 2.71E-02 3.91E-02 6.68E-02

Kidneys 9.37E-03 1.17E-02 1.69E-02 2.58E-02 4.17E-02

Liver 8.24E-03 1.06E-02 1.66E-02 2.51E-02 4.34E-02

Lungs 2.08E-02 2.65E-02 4.01E-02 5.67E-02 9.92E-02

Pancreas 2.43E-02 2.95E-02 4.50E-02 6.57E-02 1.07E-01

Prostate 9.27E-03 1.29E-02 2.88E-02 2.87E-02 5.01E-02

Salivary Glands 1.05E-02 1.40E-02 2.27E-02 3.46E-02 6.08E-02

Red Marrow 1.01E-02 1.16E-02 1.41E-02 1.79E-02 2.87E-02

Osteogenic Cells 1.54E-02 1.67E-02 2.20E-02 2.99E-02 4.85E-02

Spleen 1.14E-02 1.49E-02 2.32E-02 3.46E-02 5.99E-02

Testes 4.52E-03 5.74E-03 9.93E-03 1.40E-02 2.55E-02

Thymus 2.86E-02 4.89E-02 8.52E-02 1.76E-01 4.82E-01

Thyroid 6.88E+00 1.11E+01 1.62E+01 3.60E+01 6.37E+01

Urinary Bladder Wall 4.52E-02 5.60E-02 8.30E-02 1.23E-01 2.21E-01

Total Body 1.00E-02 1.25E-02 2.03E-02 3.17E-02 5.56E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.49E-02 1.63E-02 2.42E-02 3.63E-02 6.10E-02

Brain 6.62E-03 6.97E-03 1.14E-02 1.81E-02 3.04E-02

Breasts 7.83E-03 9.16E-03 ----- ----- -----

Esophagus 9.10E-02 1.02E-01 1.51E-01 1.90E-01 2.01E-01

Eyes 6.70E-03 7.43E-03 1.17E-02 1.91E-02 3.27E-02

Gallbladder Wall 1.15E-02 1.25E-02 1.90E-02 2.86E-02 4.41E-02

Left colon 1.36E-02 1.48E-02 2.36E-02 3.55E-02 6.07E-02

Small Intestine 5.76E-02 5.96E-02 9.27E-02 1.32E-01 1.84E-01

Stomach Wall 8.92E-02 1.00E-01 1.54E-01 2.14E-01 2.81E-01

Right colon 1.03E-02 1.11E-02 1.52E-02 2.35E-02 3.89E-02

Rectum 1.36E-02 1.69E-02 2.37E-02 3.38E-02 5.77E-02

Heart Wall 1.56E-02 1.65E-02 2.47E-02 3.67E-02 6.13E-02

Kidneys 1.16E-02 1.26E-02 1.79E-02 2.75E-02 4.43E-02

Liver 9.56E-03 1.01E-02 1.54E-02 2.35E-02 4.19E-02

Lungs 2.33E-02 2.39E-02 3.56E-02 5.30E-02 8.55E-02

Ovaries 1.11E-02 1.28E-02 1.85E-02 2.97E-02 7.49E-02

Pancreas 1.99E-02 2.21E-02 3.28E-02 4.97E-02 7.45E-02

Salivary Glands 1.38E-02 1.57E-02 2.40E-02 3.58E-02 6.22E-02

Red Marrow 1.35E-02 1.12E-02 1.19E-02 1.37E-02 1.91E-02

Osteogenic Cells 1.95E-02 1.65E-02 1.74E-02 1.93E-02 2.27E-02

Spleen 1.74E-02 1.90E-02 2.82E-02 4.13E-02 6.71E-02

Thymus 6.14E-02 8.05E-02 1.71E-01 3.08E-01 5.48E-01

Thyroid 8.00E+00 1.11E+01 1.63E+01 3.57E+01 6.45E+01

Urinary Bladder Wall 4.88E-02 5.01E-02 7.24E-02 1.09E-01 1.95E-01

Uterus 1.60E-02 1.94E-02 3.16E-02 4.58E-02 7.33E-02

Total Body 1.40E-02 1.32E-02 2.02E-02 3.14E-02 5.50E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.26E-02 1.50E-02 2.21E-02 3.33E-02 5.61E-02

Brain 5.92E-03 6.84E-03 1.13E-02 1.79E-02 3.04E-02

Breasts 7.83E-03 9.16E-03 ----- ----- -----

Esophagus 8.32E-02 1.02E-01 1.56E-01 2.45E-01 3.20E-01

Eyes 5.74E-03 6.86E-03 1.11E-02 1.80E-02 3.15E-02

Gallbladder Wall 9.81E-03 1.14E-02 1.75E-02 2.68E-02 4.15E-02

Left colon 1.40E-02 1.63E-02 2.45E-02 3.65E-02 6.17E-02

Small Intestine 5.28E-02 5.90E-02 9.26E-02 1.32E-01 1.83E-01

Stomach Wall 8.49E-02 9.95E-02 1.54E-01 2.13E-01 2.80E-01

Right colon 9.17E-03 1.15E-02 1.61E-02 2.48E-02 4.12E-02

Rectum 1.16E-02 1.46E-02 2.18E-02 3.18E-02 5.47E-02

Heart Wall 1.47E-02 1.72E-02 2.59E-02 3.79E-02 6.40E-02

Kidneys 1.05E-02 1.21E-02 1.74E-02 2.66E-02 4.30E-02

Liver 8.90E-03 1.03E-02 1.60E-02 2.43E-02 4.27E-02

Lungs 2.20E-02 2.52E-02 3.78E-02 5.49E-02 9.24E-02

Ovaries 1.11E-02 1.28E-02 1.85E-02 2.97E-02 7.49E-02

Pancreas 2.21E-02 2.58E-02 3.89E-02 5.77E-02 9.06E-02

Prostate 9.27E-03 1.29E-02 2.88E-02 2.87E-02 5.01E-02

Salivary Glands 1.21E-02 1.48E-02 2.34E-02 3.52E-02 6.15E-02

Red Marrow 1.18E-02 1.14E-02 1.30E-02 1.58E-02 2.39E-02

Osteogenic Cells 1.75E-02 1.66E-02 1.97E-02 2.46E-02 3.56E-02

Spleen 1.44E-02 1.69E-02 2.57E-02 3.80E-02 6.35E-02

Testes 4.52E-03 5.74E-03 9.93E-03 1.40E-02 2.55E-02

Thymus 4.50E-02 6.47E-02 1.28E-01 2.42E-01 5.15E-01

Thyroid 7.44E+00 1.11E+01 1.63E+01 3.58E+01 6.41E+01

Urinary Bladder Wall 4.70E-02 5.31E-02 7.77E-02 1.16E-01 2.08E-01

Uterus 1.60E-02 1.94E-02 3.16E-02 4.58E-02 7.33E-02

Total Body 1.20E-02 1.28E-02 2.02E-02 3.16E-02 5.53E-02

Effective Dose 3.38E-01 4.94E-01 7.26E-01 1.57E+00 2.78E+00

Radiation Dose Estimates (mSv/MBq) for 124I Iodide, Thyroid Blocked, 0% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.63E-02 8.44E-02 1.30E-01 2.12E-01 3.79E-01

Brain 4.38E-02 5.50E-02 9.14E-02 1.50E-01 2.71E-01

Esophagus 5.17E-02 6.58E-02 1.06E-01 1.88E-01 3.55E-01

Eyes 4.38E-02 5.50E-02 9.14E-02 1.63E-01 2.92E-01

Gallbladder Wall 6.21E-02 7.26E-02 1.12E-01 1.74E-01 3.15E-01

Left colon 6.38E-02 7.24E-02 1.17E-01 1.88E-01 3.25E-01

Small Intestine 7.10E-02 8.88E-02 1.41E-01 2.23E-01 4.08E-01

Stomach Wall 5.71E-02 7.07E-02 1.05E-01 1.75E-01 3.06E-01

Right colon 6.41E-02 7.87E-02 1.21E-01 1.90E-01 3.31E-01

Rectum 9.77E-02 1.18E-01 1.98E-01 3.10E-01 5.25E-01

Heart Wall 5.61E-02 7.10E-02 1.11E-01 1.74E-01 3.13E-01

Kidneys 9.57E-02 1.17E-01 1.60E-01 2.57E-01 4.07E-01

Liver 5.61E-02 7.10E-02 1.09E-01 1.77E-01 3.16E-01

Lungs 4.96E-02 6.39E-02 9.82E-02 1.61E-01 2.99E-01

Pancreas 6.19E-02 7.79E-02 1.20E-01 1.91E-01 3.45E-01

Prostate 1.14E-01 1.36E-01 3.55E-01 3.18E-01 5.08E-01

Salivary Glands 5.11E-02 6.51E-02 1.05E-01 1.80E-01 3.33E-01

Red Marrow 5.34E-02 6.65E-02 9.90E-02 1.50E-01 2.80E-01

Osteogenic Cells 4.98E-02 6.13E-02 9.05E-02 1.35E-01 2.41E-01

Spleen 5.71E-02 7.23E-02 1.11E-01 1.84E-01 3.28E-01

Testes 6.18E-02 7.74E-02 1.43E-01 2.05E-01 3.61E-01

Thymus 5.14E-02 6.59E-02 1.02E-01 1.68E-01 3.01E-01

Thyroid 5.12E-02 6.53E-02 1.05E-01 1.89E-01 3.58E-01

Urinary Bladder Wall 7.92E-01 9.72E-01 1.46E+00 2.21E+00 4.05E+00

Total Body 5.63E-02 6.99E-02 1.11E-01 1.75E-01 3.16E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.68E-02 8.10E-02 1.23E-01 1.91E-01 3.43E-01

Brain 5.41E-02 5.62E-02 9.14E-02 1.49E-01 2.70E-01

Breasts 5.08E-02 5.34E-02 ----- ----- -----

Esophagus 5.85E-02 6.73E-02 1.07E-01 1.72E-01 3.14E-01

Eyes 5.41E-02 5.63E-02 9.15E-02 1.50E-01 2.71E-01

Gallbladder Wall 7.35E-02 7.70E-02 1.17E-01 1.75E-01 3.04E-01

Left colon 8.06E-02 8.01E-02 1.29E-01 2.07E-01 3.51E-01

Small Intestine 8.08E-02 9.16E-02 1.41E-01 2.16E-01 3.72E-01

Stomach Wall 7.03E-02 7.23E-02 1.06E-01 1.71E-01 2.96E-01

Right colon 7.71E-02 7.86E-02 1.21E-01 1.89E-01 3.28E-01

Rectum 1.66E-01 2.04E-01 2.78E-01 4.00E-01 6.40E-01

Heart Wall 6.93E-02 7.20E-02 1.10E-01 1.71E-01 3.05E-01

Kidneys 1.09E-01 1.18E-01 1.60E-01 2.50E-01 3.93E-01

Liver 6.91E-02 7.22E-02 1.09E-01 1.75E-01 3.11E-01

Lungs 6.23E-02 6.51E-02 9.80E-02 1.52E-01 2.79E-01

Ovaries 1.13E-01 1.30E-01 1.75E-01 3.01E-01 5.39E-01

Pancreas 7.64E-02 8.03E-02 1.22E-01 1.89E-01 3.39E-01

Salivary Glands 5.79E-02 6.64E-02 1.05E-01 1.70E-01 3.10E-01

Red Marrow 6.48E-02 6.62E-02 7.93E-02 1.06E-01 1.80E-01

Osteogenic Cells 5.84E-02 6.08E-02 6.71E-02 7.60E-02 1.01E-01

Spleen 7.11E-02 7.45E-02 1.12E-01 1.80E-01 3.17E-01

Thymus 6.42E-02 6.70E-02 1.01E-01 1.59E-01 2.89E-01

Thyroid 5.79E-02 6.63E-02 1.05E-01 1.70E-01 3.10E-01

Urinary Bladder Wall 8.81E-01 8.95E-01 1.32E+00 2.03E+00 3.69E+00

Uterus 1.67E-01 2.13E-01 3.45E-01 4.89E-01 7.75E-01

Total Body 6.92E-02 7.11E-02 1.11E-01 1.74E-01 3.14E-01

Gender Average

Adrenals 7.16E-02 8.27E-02 1.26E-01 2.02E-01 3.61E-01

Brain 4.89E-02 5.56E-02 9.14E-02 1.50E-01 2.71E-01

Breasts 5.08E-02 5.34E-02 ----- ----- -----

Esophagus 5.51E-02 6.65E-02 1.07E-01 1.80E-01 3.34E-01

Eyes 4.90E-02 5.57E-02 9.14E-02 1.56E-01 2.81E-01

Gallbladder Wall 6.78E-02 7.48E-02 1.15E-01 1.75E-01 3.09E-01

Left colon 7.22E-02 7.62E-02 1.23E-01 1.98E-01 3.38E-01

Small Intestine 7.59E-02 9.02E-02 1.41E-01 2.19E-01 3.90E-01

Stomach Wall 6.37E-02 7.15E-02 1.06E-01 1.73E-01 3.01E-01

Right colon 7.06E-02 7.87E-02 1.21E-01 1.89E-01 3.29E-01

Rectum 1.32E-01 1.61E-01 2.38E-01 3.55E-01 5.83E-01

Heart Wall 6.27E-02 7.15E-02 1.11E-01 1.73E-01 3.09E-01

Kidneys 1.02E-01 1.18E-01 1.60E-01 2.54E-01 4.00E-01

Liver 6.26E-02 7.16E-02 1.09E-01 1.76E-01 3.13E-01

Lungs 5.59E-02 6.45E-02 9.81E-02 1.56E-01 2.89E-01

Ovaries 1.13E-01 1.30E-01 1.75E-01 3.01E-01 5.39E-01

Pancreas 6.91E-02 7.91E-02 1.21E-01 1.90E-01 3.42E-01

Prostate 1.14E-01 1.36E-01 3.55E-01 3.18E-01 5.08E-01

Salivary Glands 5.45E-02 6.57E-02 1.05E-01 1.75E-01 3.22E-01

Red Marrow 5.91E-02 6.64E-02 8.92E-02 1.28E-01 2.30E-01

Osteogenic Cells 5.41E-02 6.10E-02 7.88E-02 1.05E-01 1.71E-01

Spleen 6.41E-02 7.34E-02 1.12E-01 1.82E-01 3.22E-01

Testes 6.18E-02 7.74E-02 1.43E-01 2.05E-01 3.61E-01

Thymus 5.78E-02 6.64E-02 1.01E-01 1.63E-01 2.95E-01

Thyroid 5.45E-02 6.58E-02 1.05E-01 1.80E-01 3.34E-01

Urinary Bladder Wall 8.37E-01 9.34E-01 1.39E+00 2.12E+00 3.87E+00

Uterus 1.67E-01 2.13E-01 3.45E-01 4.89E-01 7.75E-01

Total Body 6.27E-02 7.05E-02 1.11E-01 1.74E-01 3.15E-01

Effective Dose 9.00E-02 1.02E-01 1.48E-01 2.30E-01 4.11E-01

Radiation Dose Estimates (mSv/MBq) for 124I Iodide, 5% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.91E-02 1.16E-01 1.72E-01 2.65E-01 4.41E-01

Brain 4.36E-02 5.53E-02 8.95E-02 1.41E-01 2.43E-01

Esophagus 3.69E-01 4.84E-01 7.41E-01 1.32E+00 2.06E+00

Eyes 4.16E-02 5.56E-02 9.02E-02 1.49E-01 2.60E-01

Gallbladder Wall 6.95E-02 8.25E-02 1.23E-01 1.92E-01 3.39E-01

Left colon 1.12E-01 1.34E-01 1.96E-01 2.95E-01 4.79E-01

Small Intestine 4.21E-01 5.15E-01 8.30E-01 1.18E+00 1.62E+00

Stomach Wall 6.47E-01 7.97E-01 1.25E+00 1.75E+00 2.27E+00

Right colon 6.88E-02 9.58E-02 1.38E-01 2.10E-01 3.50E-01

Rectum 9.79E-02 1.20E-01 1.97E-01 3.02E-01 5.02E-01

Heart Wall 1.02E-01 1.30E-01 1.95E-01 2.82E-01 4.76E-01

Kidneys 1.00E-01 1.23E-01 1.74E-01 2.71E-01 4.27E-01

Liver 6.76E-02 8.62E-02 1.30E-01 2.02E-01 3.44E-01

Lungs 1.18E-01 1.49E-01 2.20E-01 3.15E-01 5.35E-01

Pancreas 1.74E-01 2.11E-01 3.16E-01 4.64E-01 7.47E-01

Prostate 1.05E-01 1.32E-01 3.42E-01 3.04E-01 4.79E-01

Salivary Glands 7.78E-02 1.01E-01 1.58E-01 2.39E-01 4.12E-01

Red Marrow 8.05E-02 9.29E-02 1.14E-01 1.46E-01 2.36E-01

Osteogenic Cells 6.12E-02 6.82E-02 9.02E-02 1.24E-01 1.98E-01

Spleen 9.22E-02 1.19E-01 1.79E-01 2.73E-01 4.64E-01

Testes 4.81E-02 6.12E-02 1.18E-01 1.61E-01 2.82E-01

Thymus 1.71E-01 2.68E-01 4.66E-01 1.04E+00 4.09E+00

Thyroid 3.65E+01 5.76E+01 8.21E+01 1.72E+02 2.62E+02

Urinary Bladder Wall 7.45E-01 9.21E-01 1.38E+00 2.09E+00 3.82E+00

Total Body 7.72E-02 9.59E-02 1.54E-01 2.40E-01 4.19E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.19E-01 1.29E-01 1.97E-01 2.82E-01 4.74E-01

Brain 5.43E-02 5.70E-02 9.14E-02 1.43E-01 2.44E-01

Breasts 6.69E-02 7.57E-02 ----- ----- -----

Esophagus 4.33E-01 4.88E-01 7.11E-01 8.89E-01 9.83E-01

Eyes 5.68E-02 6.11E-02 9.35E-02 1.56E-01 2.67E-01

Gallbladder Wall 9.37E-02 9.93E-02 1.47E-01 2.18E-01 3.73E-01

Left colon 1.13E-01 1.20E-01 1.91E-01 2.93E-01 4.75E-01

Small Intestine 5.08E-01 5.23E-01 8.31E-01 1.18E+00 1.61E+00

Stomach Wall 7.18E-01 8.06E-01 1.26E+00 1.76E+00 2.28E+00

Right colon 8.81E-02 9.26E-02 1.30E-01 1.95E-01 3.26E-01

Rectum 1.53E-01 1.93E-01 2.61E-01 3.71E-01 5.92E-01

Heart Wall 1.10E-01 1.16E-01 1.72E-01 2.56E-01 4.25E-01

Kidneys 1.20E-01 1.31E-01 1.80E-01 2.78E-01 4.34E-01

Liver 7.85E-02 8.31E-02 1.24E-01 1.92E-01 3.35E-01

Lungs 1.34E-01 1.39E-01 2.00E-01 2.94E-01 4.70E-01

Ovaries 1.12E-01 1.29E-01 1.76E-01 3.00E-01 6.29E-01

Pancreas 1.50E-01 1.66E-01 2.44E-01 3.64E-01 5.52E-01

Salivary Glands 9.80E-02 1.11E-01 1.64E-01 2.41E-01 4.06E-01

Red Marrow 1.03E-01 8.83E-02 9.42E-02 1.11E-01 1.61E-01

Osteogenic Cells 7.33E-02 6.66E-02 7.10E-02 7.93E-02 9.72E-02

Spleen 1.34E-01 1.47E-01 2.13E-01 3.13E-01 5.07E-01

Thymus 3.29E-01 3.92E-01 8.92E-01 1.82E+00 3.80E+00

Thyroid 4.24E+01 5.76E+01 8.24E+01 1.68E+02 2.76E+02

Urinary Bladder Wall 8.34E-01 8.46E-01 1.25E+00 1.91E+00 3.47E+00

Uterus 1.70E-01 2.17E-01 3.50E-01 4.96E-01 7.76E-01

Total Body 1.04E-01 1.00E-01 1.54E-01 2.37E-01 4.15E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.04E-01 1.23E-01 1.84E-01 2.74E-01 4.58E-01

Brain 4.90E-02 5.62E-02 9.04E-02 1.42E-01 2.43E-01

Breasts 6.69E-02 7.57E-02 ----- ----- -----

Esophagus 4.01E-01 4.86E-01 7.26E-01 1.11E+00 1.52E+00

Eyes 4.92E-02 5.83E-02 9.19E-02 1.53E-01 2.64E-01

Gallbladder Wall 8.16E-02 9.09E-02 1.35E-01 2.05E-01 3.56E-01

Left colon 1.13E-01 1.27E-01 1.93E-01 2.94E-01 4.77E-01

Small Intestine 4.64E-01 5.19E-01 8.31E-01 1.18E+00 1.61E+00

Stomach Wall 6.83E-01 8.01E-01 1.26E+00 1.76E+00 2.28E+00

Right colon 7.85E-02 9.42E-02 1.34E-01 2.02E-01 3.38E-01

Rectum 1.25E-01 1.56E-01 2.29E-01 3.37E-01 5.47E-01

Heart Wall 1.06E-01 1.23E-01 1.84E-01 2.69E-01 4.50E-01

Kidneys 1.10E-01 1.27E-01 1.77E-01 2.75E-01 4.30E-01

Liver 7.31E-02 8.46E-02 1.27E-01 1.97E-01 3.40E-01

Lungs 1.26E-01 1.44E-01 2.10E-01 3.04E-01 5.02E-01

Ovaries 1.12E-01 1.29E-01 1.76E-01 3.00E-01 6.29E-01

Pancreas 1.62E-01 1.89E-01 2.80E-01 4.14E-01 6.49E-01

Prostate 1.05E-01 1.32E-01 3.42E-01 3.04E-01 4.79E-01

Salivary Glands 8.79E-02 1.06E-01 1.61E-01 2.40E-01 4.09E-01

Red Marrow 9.17E-02 9.06E-02 1.04E-01 1.29E-01 1.99E-01

Osteogenic Cells 6.73E-02 6.74E-02 8.06E-02 1.02E-01 1.47E-01

Spleen 1.13E-01 1.33E-01 1.96E-01 2.93E-01 4.85E-01

Testes 4.81E-02 6.12E-02 1.18E-01 1.61E-01 2.82E-01

Thymus 2.50E-01 3.30E-01 6.79E-01 1.43E+00 3.94E+00

Thyroid 3.95E+01 5.76E+01 8.23E+01 1.70E+02 2.69E+02

Urinary Bladder Wall 7.89E-01 8.83E-01 1.31E+00 2.00E+00 3.64E+00

Uterus 1.70E-01 2.17E-01 3.50E-01 4.96E-01 7.76E-01

Total Body 9.06E-02 9.81E-02 1.54E-01 2.39E-01 4.17E-01

Effective Dose 1.86E+00 2.65E+00 3.80E+00 7.63E+00 1.21E+01

Radiation Dose Estimates (mSv/MBq) for 124I Iodide, 15% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 9.93E-02 1.33E-01 1.95E-01 3.00E-01 4.96E-01

Brain 6.84E-02 8.73E-02 1.38E-01 2.08E-01 3.40E-01

Esophagus 9.63E-01 1.27E+00 1.94E+00 3.52E+00 5.44E+00

Eyes 6.23E-02 8.79E-02 1.40E-01 2.15E-01 3.63E-01

Gallbladder Wall 8.06E-02 9.66E-02 1.43E-01 2.24E-01 3.96E-01

Left colon 1.18E-01 1.47E-01 2.18E-01 3.28E-01 5.33E-01

Small Intestine 4.24E-01 5.20E-01 8.38E-01 1.19E+00 1.64E+00

Stomach Wall 6.69E-01 8.25E-01 1.30E+00 1.81E+00 2.37E+00

Right colon 7.03E-02 9.97E-02 1.46E-01 2.26E-01 3.82E-01

Rectum 9.50E-02 1.16E-01 1.92E-01 2.95E-01 4.92E-01

Heart Wall 1.61E-01 2.05E-01 3.07E-01 4.28E-01 7.14E-01

Kidneys 8.71E-02 1.27E-01 1.82E-01 2.82E-01 4.50E-01

Liver 8.65E-02 1.11E-01 1.68E-01 2.57E-01 4.33E-01

Lungs 2.48E-01 3.12E-01 4.56E-01 6.27E-01 1.04E+00

Pancreas 1.88E-01 2.29E-01 3.46E-01 5.06E-01 8.29E-01

Prostate 9.98E-02 1.27E-01 3.20E-01 2.96E-01 4.71E-01

Salivary Glands 1.60E-01 2.10E-01 3.21E-01 4.57E-01 7.55E-01

Red Marrow 1.43E-01 1.59E-01 1.79E-01 2.06E-01 2.95E-01

Osteogenic Cells 9.89E-02 1.05E-01 1.29E-01 1.70E-01 2.39E-01

Spleen 1.06E-01 1.37E-01 2.08E-01 3.13E-01 5.30E-01

Testes 4.71E-02 6.02E-02 1.14E-01 1.60E-01 2.81E-01

Thymus 4.24E-01 6.89E-01 1.23E+00 2.84E+00 1.18E+01

Thyroid 1.09E+02 1.73E+02 2.46E+02 5.14E+02 7.88E+02

Urinary Bladder Wall 6.71E-01 8.31E-01 1.25E+00 1.89E+00 3.46E+00

Total Body 1.25E-01 1.55E-01 2.51E-01 3.86E-01 6.65E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.30E-01 1.47E-01 2.27E-01 3.19E-01 5.29E-01

Brain 8.61E-02 9.12E-02 1.44E-01 2.16E-01 3.45E-01

Breasts 1.16E-01 1.38E-01 ----- ----- -----

Esophagus 1.18E+00 1.33E+00 1.92E+00 2.33E+00 2.36E+00

Eyes 9.35E-02 1.03E-01 1.50E-01 2.54E-01 4.14E-01

Gallbladder Wall 1.01E-01 1.08E-01 1.58E-01 2.35E-01 4.07E-01

Left colon 1.16E-01 1.23E-01 2.01E-01 3.10E-01 5.01E-01

Small Intestine 5.10E-01 5.26E-01 8.36E-01 1.19E+00 1.62E+00

Stomach Wall 7.35E-01 8.24E-01 1.29E+00 1.80E+00 2.35E+00

Right colon 9.33E-02 9.86E-02 1.35E-01 2.04E-01 3.40E-01

Rectum 1.44E-01 1.80E-01 2.46E-01 3.51E-01 5.64E-01

Heart Wall 1.93E-01 2.03E-01 2.99E-01 4.35E-01 6.98E-01

Kidneys 1.06E-01 1.33E-01 1.86E-01 2.89E-01 4.50E-01

Liver 9.94E-02 1.06E-01 1.58E-01 2.40E-01 4.15E-01

Lungs 2.86E-01 2.92E-01 4.18E-01 6.02E-01 9.18E-01

Ovaries 1.09E-01 1.26E-01 1.74E-01 2.96E-01 8.46E-01

Pancreas 1.61E-01 1.79E-01 2.64E-01 3.96E-01 6.00E-01

Salivary Glands 2.11E-01 2.37E-01 3.40E-01 4.78E-01 7.71E-01

Red Marrow 1.89E-01 1.50E-01 1.51E-01 1.65E-01 2.14E-01

Osteogenic Cells 1.22E-01 1.00E-01 1.07E-01 1.20E-01 1.39E-01

Spleen 1.45E-01 1.59E-01 2.33E-01 3.40E-01 5.58E-01

Thymus 8.85E-01 1.07E+00 2.52E+00 5.20E+00 1.10E+01

Thyroid 1.27E+02 1.73E+02 2.47E+02 5.04E+02 8.30E+02

Urinary Bladder Wall 7.52E-01 7.64E-01 1.12E+00 1.73E+00 3.13E+00

Uterus 1.62E-01 2.05E-01 3.31E-01 4.72E-01 7.46E-01

Total Body 1.71E-01 1.65E-01 2.50E-01 3.80E-01 6.54E-01

Gender Average

Adrenals 1.15E-01 1.40E-01 2.11E-01 2.48E-01 5.12E-01

Brain 7.72E-02 8.92E-02 1.41E-01 2.12E-01 3.42E-01

Breasts 1.16E-01 1.38E-01 ----- ----- -----

Esophagus 1.07E+00 1.30E+00 1.93E+00 2.93E+00 3.90E+00

Eyes 7.79E-02 9.53E-02 1.45E-01 2.35E-01 3.88E-01

Gallbladder Wall 9.06E-02 1.02E-01 1.51E-01 1.88E-01 4.02E-01

Left colon 1.17E-01 1.35E-01 2.09E-01 2.55E-01 5.17E-01

Small Intestine 4.67E-01 5.23E-01 8.37E-01 6.84E-01 1.63E+00

Stomach Wall 7.02E-01 8.24E-01 1.29E+00 9.98E-01 2.36E+00

Right colon 8.18E-02 9.92E-02 1.40E-01 1.87E-01 3.61E-01

Rectum 1.19E-01 1.48E-01 2.19E-01 3.07E-01 5.28E-01

Heart Wall 1.77E-01 2.04E-01 3.03E-01 4.11E-01 7.06E-01

Kidneys 9.63E-02 1.30E-01 1.84E-01 2.53E-01 4.50E-01

Liver 9.30E-02 1.08E-01 1.63E-01 2.28E-01 4.24E-01

Lungs 2.67E-01 3.02E-01 4.37E-01 6.04E-01 9.80E-01

Ovaries 1.09E-01 1.26E-01 1.74E-01 2.41E-01 8.46E-01

Pancreas 1.74E-01 2.04E-01 3.05E-01 3.45E-01 7.14E-01

Prostate 9.98E-02 1.27E-01 3.20E-01 2.96E-01 4.71E-01

Salivary Glands 1.85E-01 2.24E-01 3.31E-01 4.70E-01 7.63E-01

Red Marrow 1.66E-01 1.55E-01 1.65E-01 1.82E-01 2.54E-01

Osteogenic Cells 1.10E-01 1.02E-01 1.18E-01 1.43E-01 1.89E-01

Spleen 1.26E-01 1.48E-01 2.21E-01 2.42E-01 5.44E-01

Testes 4.71E-02 6.02E-02 1.14E-01 1.60E-01 2.81E-01

Thymus 6.55E-01 8.79E-01 1.87E+00 4.06E+00 1.14E+01

Thyroid 1.18E+02 1.73E+02 2.47E+02 5.14E+02 8.09E+02

Urinary Bladder Wall 7.12E-01 7.97E-01 1.19E+00 1.80E+00 3.29E+00

Uterus 1.62E-01 2.05E-01 3.31E-01 4.00E-01 7.46E-01

Total Body 1.48E-01 1.60E-01 2.51E-01 3.67E-01 6.59E-01

Effective Dose 5.23E+00 7.56E+00 1.08E+01 2.21E+01 3.50E+01

Radiation Dose Estimates (mSv/MBq) for 124I Iodide, 25% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.15E-01 1.49E-01 2.19E-01 3.34E-01 5.55E-01

Brain 9.34E-02 1.18E-01 1.86E-01 2.74E-01 4.41E-01

Esophagus 1.56E+00 2.02E+00 3.14E+00 5.67E+00 8.95E+00

Eyes 8.33E-02 1.19E-01 1.89E-01 2.79E-01 4.69E-01

Gallbladder Wall 9.25E-02 1.10E-01 1.63E-01 2.55E-01 4.55E-01

Left colon 1.26E-01 1.60E-01 2.40E-01 3.60E-01 5.90E-01

Small Intestine 4.28E-01 5.24E-01 8.46E-01 1.20E+00 1.66E+00

Stomach Wall 6.92E-01 8.52E-01 1.34E+00 1.87E+00 2.47E+00

Right colon 7.24E-02 1.03E-01 1.54E-01 2.42E-01 4.16E-01

Rectum 9.22E-02 1.12E-01 1.86E-01 2.87E-01 4.82E-01

Heart Wall 2.21E-01 2.77E-01 4.18E-01 5.70E-01 9.61E-01

Kidneys 1.07E-01 1.32E-01 1.93E-01 2.97E-01 4.80E-01

Liver 1.06E-01 1.35E-01 2.05E-01 3.11E-01 5.25E-01

Lungs 3.81E-01 4.69E-01 6.92E-01 9.31E-01 1.57E+00

Pancreas 2.02E-01 2.46E-01 3.75E-01 5.46E-01 9.15E-01

Prostate 9.50E-02 1.21E-01 2.97E-01 2.88E-01 4.64E-01

Salivary Glands 2.43E-01 3.14E-01 4.85E-01 6.69E-01 1.11E+00

Red Marrow 2.06E-01 2.23E-01 2.43E-01 2.64E-01 3.55E-01

Osteogenic Cells 1.37E-01 1.40E-01 1.69E-01 2.15E-01 2.82E-01

Spleen 1.22E-01 1.55E-01 2.38E-01 3.52E-01 5.99E-01

Testes 4.61E-02 5.91E-02 1.10E-01 1.58E-01 2.81E-01

Thymus 6.80E-01 1.09E+00 1.99E+00 4.58E+00 1.98E+01

Thyroid 1.83E+02 2.83E+02 4.10E+02 8.48E+02 1.33E+03

Urinary Bladder Wall 5.98E-01 7.41E-01 1.11E+00 1.69E+00 3.09E+00

Total Body 1.73E-01 2.12E-01 3.49E-01 5.29E-01 9.21E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.45E-01 1.64E-01 2.56E-01 3.55E-01 5.86E-01

Brain 1.18E-01 1.24E-01 1.97E-01 2.87E-01 4.51E-01

Breasts 1.66E-01 1.97E-01 ----- ----- -----

Esophagus 1.94E+00 2.13E+00 3.13E+00 3.73E+00 3.80E+00

Eyes 1.31E-01 1.43E-01 2.06E-01 3.49E-01 5.66E-01

Gallbladder Wall 1.09E-01 1.15E-01 1.70E-01 2.52E-01 4.43E-01

Left colon 1.19E-01 1.26E-01 2.11E-01 3.26E-01 5.29E-01

Small Intestine 5.14E-01 5.29E-01 8.41E-01 1.20E+00 1.64E+00

Stomach Wall 7.53E-01 8.41E-01 1.32E+00 1.84E+00 2.41E+00

Right colon 9.92E-02 1.04E-01 1.40E-01 2.12E-01 3.55E-01

Rectum 1.35E-01 1.68E-01 2.30E-01 3.31E-01 5.36E-01

Heart Wall 2.78E-01 2.86E-01 4.25E-01 6.09E-01 9.82E-01

Kidneys 1.27E-01 1.36E-01 1.95E-01 3.02E-01 4.74E-01

Liver 1.22E-01 1.27E-01 1.91E-01 2.87E-01 4.98E-01

Lungs 4.39E-01 4.39E-01 6.35E-01 9.03E-01 1.38E+00

Ovaries 1.06E-01 1.22E-01 1.72E-01 2.92E-01 1.07E+00

Pancreas 1.73E-01 1.91E-01 2.84E-01 4.26E-01 6.50E-01

Salivary Glands 3.25E-01 3.59E-01 5.16E-01 7.09E-01 1.15E+00

Red Marrow 2.77E-01 2.10E-01 2.07E-01 2.17E-01 2.70E-01

Osteogenic Cells 1.71E-01 1.32E-01 1.44E-01 1.60E-01 1.82E-01

Spleen 1.58E-01 1.71E-01 2.54E-01 3.67E-01 6.12E-01

Thymus 1.45E+00 1.72E+00 4.14E+00 8.49E+00 1.84E+01

Thyroid 2.13E+02 2.83E+02 4.12E+02 8.30E+02 1.41E+03

Urinary Bladder Wall 6.70E-01 6.81E-01 1.00E+00 1.54E+00 2.79E+00

Uterus 1.53E-01 1.94E-01 3.12E-01 4.49E-01 7.16E-01

Total Body 2.40E-01 2.26E-01 3.46E-01 5.20E-01 9.03E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.30E-01 1.57E-01 2.37E-01 3.45E-01 5.70E-01

Brain 1.06E-01 1.21E-01 1.92E-01 2.81E-01 4.46E-01

Breasts 1.66E-01 1.97E-01 ----- ----- -----

Esophagus 1.75E+00 2.08E+00 3.13E+00 4.70E+00 6.37E+00

Eyes 1.07E-01 1.31E-01 1.98E-01 3.14E-01 5.18E-01

Gallbladder Wall 1.01E-01 1.13E-01 1.67E-01 2.53E-01 4.49E-01

Left colon 1.23E-01 1.43E-01 2.25E-01 3.43E-01 5.60E-01

Small Intestine 4.71E-01 5.26E-01 8.43E-01 1.20E+00 1.65E+00

Stomach Wall 7.22E-01 8.47E-01 1.33E+00 1.86E+00 2.44E+00

Right colon 8.58E-02 1.04E-01 1.47E-01 2.27E-01 3.86E-01

Rectum 1.13E-01 1.40E-01 2.08E-01 3.09E-01 5.09E-01

Heart Wall 2.49E-01 2.81E-01 4.21E-01 5.90E-01 9.72E-01

Kidneys 1.17E-01 1.34E-01 1.94E-01 2.99E-01 4.77E-01

Liver 1.14E-01 1.31E-01 1.98E-01 2.99E-01 5.11E-01

Lungs 4.10E-01 4.54E-01 6.63E-01 9.17E-01 1.48E+00

Ovaries 1.06E-01 1.22E-01 1.72E-01 2.92E-01 1.07E+00

Pancreas 1.88E-01 2.19E-01 3.30E-01 4.86E-01 7.82E-01

Prostate 9.50E-02 1.21E-01 2.97E-01 2.88E-01 4.64E-01

Salivary Glands 2.84E-01 3.36E-01 5.00E-01 6.89E-01 1.13E+00

Red Marrow 2.42E-01 2.16E-01 2.25E-01 2.41E-01 3.12E-01

Osteogenic Cells 1.54E-01 1.36E-01 1.56E-01 1.87E-01 2.32E-01

Spleen 1.40E-01 1.63E-01 2.46E-01 3.60E-01 6.06E-01

Testes 4.61E-02 5.91E-02 1.10E-01 1.58E-01 2.81E-01

Thymus 1.06E+00 1.41E+00 3.06E+00 6.53E+00 1.91E+01

Thyroid 1.98E+02 2.83E+02 4.11E+02 8.39E+02 1.37E+03

Urinary Bladder Wall 6.34E-01 7.11E-01 1.06E+00 1.62E+00 2.94E+00

Uterus 1.53E-01 1.94E-01 3.12E-01 4.49E-01 7.16E-01

Total Body 2.07E-01 2.19E-01 3.47E-01 5.24E-01 9.12E-01

Effective Dose 8.65E+00 1.23E+01 1.78E+01 3.60E+01 5.88E+01

Radiation Dose Estimates (mSv/MBq) for 124I Iodide, 35% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.28E-01 1.66E-01 2.41E-01 3.72E-01 6.06E-01

Brain 1.19E-01 1.51E-01 2.33E-01 3.46E-01 5.31E-01

Esophagus 2.17E+00 2.83E+00 4.30E+00 8.03E+00 1.21E+01

Eyes 1.04E-01 1.52E-01 2.37E-01 3.49E-01 5.64E-01

Gallbladder Wall 1.04E-01 1.25E-01 1.83E-01 2.89E-01 5.08E-01

Left colon 1.32E-01 1.74E-01 2.61E-01 3.96E-01 6.40E-01

Small Intestine 4.32E-01 5.28E-01 8.53E-01 1.22E+00 1.68E+00

Stomach Wall 7.14E-01 8.81E-01 1.38E+00 1.94E+00 2.56E+00

Right colon 7.42E-02 1.08E-01 1.62E-01 2.60E-01 4.47E-01

Rectum 8.93E-02 1.09E-01 1.80E-01 2.80E-01 4.71E-01

Heart Wall 2.82E-01 3.54E-01 5.25E-01 7.27E-01 1.18E+00

Kidneys 1.09E-01 1.36E-01 2.00E-01 3.09E-01 5.00E-01

Liver 1.26E-01 1.60E-01 2.41E-01 3.70E-01 6.08E-01

Lungs 5.14E-01 6.37E-01 9.20E-01 1.27E+00 2.05E+00

Pancreas 2.17E-01 2.64E-01 4.04E-01 5.91E-01 9.91E-01

Prostate 9.02E-02 1.16E-01 2.75E-01 2.80E-01 4.55E-01

Salivary Glands 3.27E-01 4.26E-01 6.43E-01 9.02E-01 1.43E+00

Red Marrow 2.70E-01 2.91E-01 3.06E-01 3.28E-01 4.09E-01

Osteogenic Cells 1.76E-01 1.78E-01 2.07E-01 2.64E-01 3.21E-01

Spleen 1.37E-01 1.74E-01 2.67E-01 3.95E-01 6.61E-01

Testes 4.51E-02 5.81E-02 1.07E-01 1.58E-01 2.80E-01

Thymus 9.39E-01 1.53E+00 2.72E+00 6.50E+00 2.70E+01

Thyroid 2.58E+02 4.02E+02 5.69E+02 1.21E+03 1.82E+03

Urinary Bladder Wall 5.25E-01 6.52E-01 9.81E-01 1.50E+00 2.73E+00

Total Body 2.22E-01 2.73E-01 4.42E-01 6.85E-01 1.15E+00

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.58E-01 1.83E-01 2.85E-01 3.94E-01 6.36E-01

Brain 1.51E-01 1.59E-01 2.48E-01 3.66E-01 5.45E-01

Breasts 2.16E-01 2.61E-01 ----- ----- -----

Esophagus 2.70E+00 3.00E+00 4.30E+00 5.28E+00 5.08E+00

Eyes 1.68E-01 1.86E-01 2.61E-01 4.53E-01 7.03E-01

Gallbladder Wall 1.17E-01 1.24E-01 1.81E-01 2.70E-01 4.75E-01

Left colon 1.23E-01 1.30E-01 2.20E-01 3.45E-01 5.53E-01

Small Intestine 5.16E-01 5.32E-01 8.46E-01 1.21E+00 1.65E+00

Stomach Wall 7.70E-01 8.60E-01 1.34E+00 1.88E+00 2.47E+00

Right colon 1.05E-01 1.10E-01 1.44E-01 2.21E-01 3.68E-01

Rectum 1.26E-01 1.55E-01 2.15E-01 3.12E-01 5.07E-01

Heart Wall 3.62E-01 3.76E-01 5.47E-01 8.00E-01 1.24E+00

Kidneys 1.30E-01 1.38E-01 2.00E-01 3.14E-01 4.88E-01

Liver 1.43E-01 1.50E-01 2.24E-01 3.38E-01 5.71E-01

Lungs 5.94E-01 5.98E-01 8.45E-01 1.23E+00 1.80E+00

Ovaries 1.03E-01 1.18E-01 1.70E-01 2.89E-01 1.27E+00

Pancreas 1.84E-01 2.04E-01 3.03E-01 4.60E-01 6.95E-01

Salivary Glands 4.40E-01 4.89E-01 6.86E-01 9.63E-01 1.49E+00

Red Marrow 3.66E-01 2.73E-01 2.62E-01 2.75E-01 3.19E-01

Osteogenic Cells 2.20E-01 1.66E-01 1.79E-01 2.03E-01 2.21E-01

Spleen 1.71E-01 1.84E-01 2.73E-01 3.97E-01 6.60E-01

Thymus 2.02E+00 2.42E+00 5.71E+00 1.21E+01 2.51E+01

Thyroid 2.99E+02 4.02E+02 5.71E+02 1.19E+03 1.92E+03

Urinary Bladder Wall 5.88E-01 5.98E-01 8.82E-01 1.36E+00 2.46E+00

Uterus 1.44E-01 1.82E-01 2.92E-01 4.26E-01 6.84E-01

Total Body 3.09E-01 2.92E-01 4.39E-01 6.74E-01 1.13E+00

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.43E-01 1.74E-01 2.63E-01 3.83E-01 6.21E-01

Brain 1.35E-01 1.55E-01 2.41E-01 3.56E-01 5.38E-01

Breasts 2.16E-01 2.61E-01 ----- ----- -----

Esophagus 2.44E+00 2.91E+00 4.30E+00 6.65E+00 8.59E+00

Eyes 1.36E-01 1.69E-01 2.49E-01 4.01E-01 6.34E-01

Gallbladder Wall 1.11E-01 1.24E-01 1.82E-01 2.80E-01 4.92E-01

Left colon 1.27E-01 1.52E-01 2.40E-01 3.70E-01 5.97E-01

Small Intestine 4.74E-01 5.30E-01 8.50E-01 1.21E+00 1.67E+00

Stomach Wall 7.42E-01 8.70E-01 1.36E+00 1.91E+00 2.51E+00

Right colon 8.95E-02 1.09E-01 1.53E-01 2.40E-01 4.07E-01

Rectum 1.07E-01 1.32E-01 1.98E-01 2.96E-01 4.89E-01

Heart Wall 3.22E-01 3.65E-01 5.36E-01 7.64E-01 1.21E+00

Kidneys 1.20E-01 1.37E-01 2.00E-01 3.12E-01 4.94E-01

Liver 1.35E-01 1.55E-01 2.32E-01 3.54E-01 5.89E-01

Lungs 5.54E-01 6.18E-01 8.83E-01 1.25E+00 1.92E+00

Ovaries 1.03E-01 1.18E-01 1.70E-01 2.89E-01 1.27E+00

Pancreas 2.01E-01 2.34E-01 3.54E-01 5.26E-01 8.43E-01

Prostate 9.02E-02 1.16E-01 2.75E-01 2.80E-01 4.55E-01

Salivary Glands 3.84E-01 4.58E-01 6.65E-01 9.33E-01 1.46E+00

Red Marrow 3.18E-01 2.82E-01 2.84E-01 3.01E-01 3.64E-01

Osteogenic Cells 1.98E-01 1.72E-01 1.93E-01 2.34E-01 2.71E-01

Spleen 1.54E-01 1.79E-01 2.70E-01 3.96E-01 6.60E-01

Testes 4.51E-02 5.81E-02 1.07E-01 1.58E-01 2.80E-01

Thymus 1.48E+00 1.97E+00 4.22E+00 9.31E+00 2.61E+01

Thyroid 2.79E+02 4.02E+02 5.70E+02 1.20E+03 1.87E+03

Urinary Bladder Wall 5.56E-01 6.25E-01 9.31E-01 1.43E+00 2.59E+00

Uterus 1.44E-01 1.82E-01 2.92E-01 4.26E-01 6.84E-01

Total Body 2.66E-01 2.83E-01 4.40E-01 6.80E-01 1.14E+00

Effective Dose 1.21E+01 1.73E+01 2.46E+01 5.14E+01 8.01E+01

Radiation Dose Estimates (mSv/MBq) for 124I Iodide, 45% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.41E-01 1.83E-01 2.66E-01 4.06E-01 6.62E-01

Brain 1.42E-01 1.84E-01 2.84E-01 4.13E-01 6.29E-01

Esophagus 2.73E+00 3.64E+00 5.56E+00 1.02E+01 1.55E+01

Eyes 1.24E-01 1.86E-01 2.88E-01 4.14E-01 6.68E-01

Gallbladder Wall 1.15E-01 1.39E-01 2.04E-01 3.21E-01 5.66E-01

Left colon 1.38E-01 1.88E-01 2.84E-01 4.29E-01 6.95E-01

Small Intestine 4.35E-01 5.33E-01 8.62E-01 1.23E+00 1.70E+00

Stomach Wall 7.35E-01 9.10E-01 1.43E+00 2.00E+00 2.66E+00

Right colon 7.58E-02 1.12E-01 1.70E-01 2.76E-01 4.80E-01

Rectum 8.64E-02 1.05E-01 1.75E-01 2.73E-01 4.60E-01

Heart Wall 3.37E-01 4.32E-01 6.42E-01 8.72E-01 1.42E+00

Kidneys 1.12E-01 1.41E-01 2.10E-01 3.22E-01 5.26E-01

Liver 1.44E-01 1.86E-01 2.80E-01 4.24E-01 6.97E-01

Lungs 6.36E-01 8.06E-01 1.17E+00 1.57E+00 2.56E+00

Pancreas 2.30E-01 2.82E-01 4.35E-01 6.33E-01 1.08E+00

Prostate 8.52E-02 1.10E-01 2.53E-01 2.72E-01 4.47E-01

Salivary Glands 4.05E-01 5.38E-01 8.15E-01 1.12E+00 1.78E+00

Red Marrow 3.29E-01 3.59E-01 3.74E-01 3.86E-01 4.68E-01

Osteogenic Cells 2.11E-01 2.16E-01 2.48E-01 3.09E-01 3.63E-01

Spleen 1.51E-01 1.93E-01 2.98E-01 4.35E-01 7.28E-01

Testes 4.41E-02 5.71E-02 1.03E-01 1.57E-01 2.79E-01

Thymus 1.18E+00 1.96E+00 3.52E+00 8.28E+00 3.48E+01

Thyroid 3.27E+02 5.21E+02 7.41E+02 1.55E+03 2.36E+03

Urinary Bladder Wall 4.52E-01 5.62E-01 8.48E-01 1.30E+00 2.37E+00

Total Body 2.67E-01 3.34E-01 5.44E-01 8.30E-01 1.40E+00

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.70E-01 2.02E-01 3.16E-01 4.31E-01 6.92E-01

Brain 1.81E-01 1.94E-01 3.03E-01 4.38E-01 6.48E-01

Breasts 2.63E-01 3.25E-01 ----- ----- -----

Esophagus 3.40E+00 3.86E+00 5.57E+00 6.70E+00 6.48E+00

Eyes 2.03E-01 2.29E-01 3.20E-01 5.50E-01 8.52E-01

Gallbladder Wall 1.24E-01 1.32E-01 1.93E-01 2.87E-01 5.10E-01

Left colon 1.25E-01 1.34E-01 2.30E-01 3.61E-01 5.80E-01

Small Intestine 5.19E-01 5.36E-01 8.51E-01 1.22E+00 1.67E+00

Stomach Wall 7.87E-01 8.78E-01 1.37E+00 1.92E+00 2.53E+00

Right colon 1.10E-01 1.17E-01 1.50E-01 2.29E-01 3.82E-01

Rectum 1.17E-01 1.43E-01 2.00E-01 2.92E-01 4.79E-01

Heart Wall 4.41E-01 4.65E-01 6.79E-01 9.77E-01 1.51E+00

Kidneys 1.33E-01 1.41E-01 2.08E-01 3.25E-01 5.06E-01

Liver 1.64E-01 1.74E-01 2.59E-01 3.86E-01 6.52E-01

Lungs 7.37E-01 7.56E-01 1.07E+00 1.54E+00 2.26E+00

Ovaries 9.98E-02 1.14E-01 1.68E-01 2.86E-01 1.49E+00

Pancreas 1.95E-01 2.18E-01 3.24E-01 4.92E-01 7.44E-01

Salivary Glands 5.47E-01 6.20E-01 8.70E-01 1.20E+00 1.86E+00

Red Marrow 4.47E-01 3.37E-01 3.21E-01 3.28E-01 3.73E-01

Osteogenic Cells 2.66E-01 2.01E-01 2.17E-01 2.44E-01 2.64E-01

Spleen 1.82E-01 1.97E-01 2.95E-01 4.24E-01 7.12E-01

Thymus 2.54E+00 3.12E+00 7.42E+00 1.55E+01 3.24E+01

Thyroid 3.79E+02 5.21E+02 7.44E+02 1.52E+03 2.48E+03

Urinary Bladder Wall 5.05E-01 5.16E-01 7.60E-01 1.17E+00 2.12E+00

Uterus 1.36E-01 1.70E-01 2.73E-01 4.02E-01 6.54E-01

Total Body 3.73E-01 3.59E-01 5.39E-01 8.15E-01 1.37E+00

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.55E-01 1.92E-01 2.91E-01 4.18E-01 6.77E-01

Brain 1.61E-01 1.89E-01 2.94E-01 4.25E-01 6.39E-01

Breasts 2.63E-01 3.25E-01 ----- ----- -----

Esophagus 3.07E+00 3.75E+00 5.56E+00 8.45E+00 1.10E+01

Eyes 1.63E-01 2.07E-01 3.04E-01 4.82E-01 7.60E-01

Gallbladder Wall 1.20E-01 1.36E-01 1.99E-01 3.04E-01 5.38E-01

Left colon 1.32E-01 1.61E-01 2.57E-01 3.95E-01 6.38E-01

Small Intestine 4.77E-01 5.34E-01 8.56E-01 1.22E+00 1.69E+00

Stomach Wall 7.61E-01 8.94E-01 1.40E+00 1.96E+00 2.59E+00

Right colon 9.29E-02 1.14E-01 1.60E-01 2.53E-01 4.31E-01

Rectum 1.01E-01 1.24E-01 1.87E-01 2.82E-01 4.70E-01

Heart Wall 3.89E-01 4.48E-01 6.61E-01 9.25E-01 1.47E+00

Kidneys 1.22E-01 1.41E-01 2.09E-01 3.23E-01 5.16E-01

Liver 1.54E-01 1.80E-01 2.70E-01 4.05E-01 6.75E-01

Lungs 6.87E-01 7.81E-01 1.12E+00 1.56E+00 2.41E+00

Ovaries 9.98E-02 1.14E-01 1.68E-01 2.86E-01 1.49E+00

Pancreas 2.12E-01 2.50E-01 3.79E-01 5.62E-01 9.09E-01

Prostate 8.52E-02 1.10E-01 2.53E-01 2.72E-01 4.47E-01

Salivary Glands 4.76E-01 5.79E-01 8.42E-01 1.16E+00 1.82E+00

Red Marrow 3.88E-01 3.48E-01 3.47E-01 3.57E-01 4.21E-01

Osteogenic Cells 2.38E-01 2.08E-01 2.32E-01 2.76E-01 3.13E-01

Spleen 1.67E-01 1.95E-01 2.96E-01 4.30E-01 7.20E-01

Testes 4.41E-02 5.71E-02 1.03E-01 1.57E-01 2.79E-01

Thymus 1.86E+00 2.54E+00 5.47E+00 1.19E+01 3.36E+01

Thyroid 3.53E+02 5.21E+02 7.43E+02 1.54E+03 2.42E+03

Urinary Bladder Wall 4.79E-01 5.39E-01 8.04E-01 1.24E+00 2.24E+00

Uterus 1.36E-01 1.70E-01 2.73E-01 4.02E-01 6.54E-01

Total Body 3.20E-01 3.46E-01 5.42E-01 8.23E-01 1.38E+00

Effective Dose 1.53E+01 2.24E+01 3.19E+01 6.57E+01 1.03E+02

Radiation Dose Estimates (mSv/MBq) for 124I Iodide, 55% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.20E-01 1.98E-01 2.88E-01 4.41E-01 7.19E-01

Brain 1.67E-01 2.15E-01 3.31E-01 4.79E-01 7.28E-01

Esophagus 3.30E+00 4.39E+00 6.72E+00 1.24E+01 1.89E+01

Eyes 1.44E-01 2.17E-01 3.36E-01 4.79E-01 7.72E-01

Gallbladder Wall 1.07E-01 1.53E-01 2.24E-01 3.52E-01 6.23E-01

Left colon 8.22E-02 2.01E-01 3.05E-01 4.62E-01 7.51E-01

Small Intestine 7.26E-02 5.37E-01 8.69E-01 1.24E+00 1.73E+00

Stomach Wall 1.61E-01 9.37E-01 1.47E+00 2.06E+00 2.76E+00

Right colon 5.63E-02 1.15E-01 1.78E-01 2.93E-01 5.13E-01

Rectum 6.45E-02 1.02E-01 1.70E-01 2.66E-01 4.51E-01

Heart Wall 3.65E-01 5.03E-01 7.50E-01 1.02E+00 1.67E+00

Kidneys 9.58E-02 1.45E-01 2.20E-01 3.35E-01 5.53E-01

Liver 1.46E-01 2.10E-01 3.16E-01 4.78E-01 7.87E-01

Lungs 7.51E-01 9.61E-01 1.40E+00 1.88E+00 3.08E+00

Pancreas 1.21E-01 2.99E-01 4.63E-01 6.74E-01 1.16E+00

Prostate 7.06E-02 1.05E-01 2.31E-01 2.65E-01 4.40E-01

Salivary Glands 4.88E-01 6.41E-01 9.73E-01 1.33E+00 2.13E+00

Red Marrow 3.83E-01 4.23E-01 4.36E-01 4.45E-01 5.28E-01

Osteogenic Cells 2.43E-01 2.50E-01 2.86E-01 3.54E-01 4.05E-01

Spleen 1.22E-01 2.11E-01 3.26E-01 4.75E-01 7.96E-01

Testes 4.19E-02 5.61E-02 9.96E-02 1.56E-01 2.79E-01

Thymus 1.43E+00 2.36E+00 4.26E+00 1.01E+01 4.26E+01

Thyroid 4.01E+02 6.31E+02 9.00E+02 1.89E+03 2.89E+03

Urinary Bladder Wall 3.76E-01 4.78E-01 7.23E-01 1.11E+00 2.03E+00

Total Body 3.04E-01 3.91E-01 6.38E-01 9.75E-01 1.65E+00

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.83E-01 2.19E-01 3.44E-01 4.67E-01 7.47E-01

Brain 2.13E-01 2.27E-01 3.54E-01 5.11E-01 7.51E-01

Breasts 3.13E-01 3.84E-01 ----- ----- -----

Esophagus 4.17E+00 4.66E+00 6.74E+00 8.13E+00 7.88E+00

Eyes 2.40E-01 2.69E-01 3.75E-01 6.47E-01 1.00E+00

Gallbladder Wall 1.32E-01 1.40E-01 2.04E-01 3.05E-01 5.45E-01

Left colon 1.28E-01 1.37E-01 2.40E-01 3.78E-01 6.07E-01

Small Intestine 5.22E-01 5.39E-01 8.56E-01 1.23E+00 1.69E+00

Stomach Wall 8.05E-01 8.95E-01 1.40E+00 1.96E+00 2.59E+00

Right colon 1.16E-01 1.22E-01 1.55E-01 2.37E-01 3.97E-01

Rectum 1.08E-01 1.31E-01 1.86E-01 2.73E-01 4.53E-01

Heart Wall 5.25E-01 5.48E-01 8.01E-01 1.15E+00 1.79E+00

Kidneys 1.37E-01 1.44E-01 2.15E-01 3.37E-01 5.27E-01

Liver 1.85E-01 1.95E-01 2.92E-01 4.33E-01 7.33E-01

Lungs 8.91E-01 9.02E-01 1.28E+00 1.84E+00 2.71E+00

Ovaries 9.69E-02 1.11E-01 1.66E-01 2.83E-01 1.71E+00

Pancreas 2.06E-01 2.30E-01 3.43E-01 5.23E-01 7.92E-01

Salivary Glands 6.62E-01 7.40E-01 1.04E+00 1.43E+00 2.23E+00

Red Marrow 5.35E-01 3.96E-01 3.76E-01 3.81E-01 4.27E-01

Osteogenic Cells 3.15E-01 2.33E-01 2.52E-01 2.84E-01 3.06E-01

Spleen 1.94E-01 2.10E-01 3.15E-01 4.52E-01 7.65E-01

Thymus 3.11E+00 3.77E+00 8.99E+00 1.88E+01 3.97E+01

Thyroid 4.65E+02 6.31E+02 9.04E+02 1.85E+03 3.05E+03

Urinary Bladder Wall 4.28E-01 4.38E-01 6.46E-01 1.00E+00 1.80E+00

Uterus 1.28E-01 1.59E-01 2.56E-01 3.81E-01 6.26E-01

Total Body 4.42E-01 4.20E-01 6.32E-01 9.57E-01 1.61E+00

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.23E-01 2.09E-01 3.16E-01 4.54E-01 7.33E-01

Brain 1.90E-01 2.21E-01 3.42E-01 4.95E-01 7.39E-01

Breasts 3.07E-01 3.84E-01 0.00E+00 0.00E+00 0.00E+00

Esophagus 3.73E+00 4.52E+00 6.73E+00 1.03E+01 1.34E+01

Eyes 1.92E-01 2.43E-01 3.55E-01 5.63E-01 8.86E-01

Gallbladder Wall 1.01E-01 1.46E-01 2.14E-01 3.28E-01 5.84E-01

Left colon 7.89E-02 1.69E-01 2.73E-01 4.20E-01 6.79E-01

Small Intestine 7.45E-02 5.38E-01 8.63E-01 1.23E+00 1.71E+00

Stomach Wall 1.53E-01 9.16E-01 1.43E+00 2.01E+00 2.67E+00

Right colon 7.09E-02 1.19E-01 1.66E-01 2.65E-01 4.55E-01

Rectum 8.00E-02 1.16E-01 1.78E-01 2.70E-01 4.52E-01

Heart Wall 4.35E-01 5.26E-01 7.76E-01 1.09E+00 1.73E+00

Kidneys 1.02E-01 1.45E-01 2.17E-01 3.36E-01 5.40E-01

Liver 1.56E-01 2.02E-01 3.04E-01 4.56E-01 7.60E-01

Lungs 8.14E-01 9.32E-01 1.34E+00 1.86E+00 2.89E+00

Ovaries 7.41E-02 1.11E-01 1.66E-01 2.83E-01 1.71E+00

Pancreas 1.19E-01 2.64E-01 4.03E-01 5.98E-01 9.76E-01

Prostate 7.06E-02 1.05E-01 2.31E-01 2.65E-01 4.40E-01

Salivary Glands 5.74E-01 6.91E-01 1.01E+00 1.38E+00 2.18E+00

Red Marrow 4.53E-01 4.09E-01 4.06E-01 4.13E-01 4.77E-01

Osteogenic Cells 2.76E-01 2.42E-01 2.69E-01 3.19E-01 3.56E-01

Spleen 1.20E-01 2.10E-01 3.20E-01 4.63E-01 7.80E-01

Testes 4.19E-02 5.61E-02 9.96E-02 1.56E-01 2.79E-01

Thymus 2.27E+00 3.06E+00 6.62E+00 1.44E+01 4.12E+01

Thyroid 4.33E+02 6.31E+02 9.02E+02 1.87E+03 2.97E+03

Urinary Bladder Wall 3.96E-01 4.58E-01 6.84E-01 1.06E+00 1.91E+00

Uterus 9.84E-02 1.59E-01 2.56E-01 3.81E-01 6.26E-01

Total Body 3.64E-01 4.05E-01 6.35E-01 9.66E-01 1.63E+00

Effective Dose 1.86E+01 2.71E+01 3.87E+01 7.99E+01 1.27E+02

Radiation Dose Estimates (mSv/MBq) for 125I Iodide, Thyroid Blocked, 0% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.81E-03 7.69E-03 1.24E-02 2.01E-02 3.77E-02

Brain 4.91E-03 6.33E-03 1.07E-02 1.78E-02 3.34E-02

Esophagus 4.92E-03 6.34E-03 1.09E-02 1.81E-02 3.49E-02

Eyes 4.91E-03 6.33E-03 1.07E-02 1.78E-02 3.34E-02

Gallbladder Wall 5.16E-03 6.11E-03 9.48E-03 1.72E-02 3.30E-02

Left colon 5.22E-03 6.42E-03 1.02E-02 1.74E-02 3.46E-02

Small Intestine 5.56E-03 7.18E-03 1.27E-02 2.12E-02 4.13E-02

Stomach Wall 4.93E-03 6.52E-03 1.04E-02 1.79E-02 3.41E-02

Right colon 4.97E-03 6.65E-03 1.14E-02 1.83E-02 3.57E-02

Rectum 8.01E-03 1.08E-02 2.07E-02 3.42E-02 6.58E-02

Heart Wall 4.92E-03 6.35E-03 1.09E-02 1.78E-02 3.41E-02

Kidneys 1.03E-02 1.27E-02 1.79E-02 2.84E-02 4.65E-02

Liver 4.98E-03 6.42E-03 1.08E-02 1.77E-02 3.41E-02

Lungs 5.19E-03 6.89E-03 1.13E-02 1.86E-02 3.60E-02

Pancreas 5.16E-03 6.59E-03 1.12E-02 1.86E-02 3.62E-02

Prostate 9.16E-03 1.24E-02 3.81E-02 3.47E-02 6.78E-02

Salivary Glands 4.92E-03 6.34E-03 1.09E-02 1.81E-02 3.49E-02

Red Marrow 3.28E-03 4.30E-03 7.31E-03 1.21E-02 2.42E-02

Osteogenic Cells 9.63E-03 1.28E-02 2.14E-02 3.48E-02 7.33E-02

Spleen 5.09E-03 6.57E-03 1.10E-02 1.81E-02 3.48E-02

Testes 4.49E-03 5.90E-03 1.01E-02 1.59E-02 3.27E-02

Thymus 4.70E-03 6.06E-03 1.04E-02 1.71E-02 3.26E-02

Thyroid 4.92E-03 6.34E-03 1.09E-02 1.81E-02 3.48E-02

Urinary Bladder Wall 1.09E-01 1.33E-01 1.99E-01 2.97E-01 5.43E-01

Total Body 5.47E-03 7.01E-03 1.19E-02 1.94E-02 3.74E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.90E-03 7.37E-03 1.18E-02 1.93E-02 3.69E-02

Brain 6.17E-03 6.46E-03 1.07E-02 1.78E-02 3.34E-02

Breasts 4.91E-03 5.41E-03 ----- ----- -----

Esophagus 5.81E-03 6.47E-03 1.10E-02 1.81E-02 3.49E-02

Eyes 6.17E-03 6.46E-03 1.07E-02 1.78E-02 3.34E-02

Gallbladder Wall 5.97E-03 6.42E-03 9.74E-03 1.76E-02 3.36E-02

Left colon 6.89E-03 7.28E-03 1.17E-02 2.02E-02 4.08E-02

Small Intestine 6.24E-03 7.36E-03 1.25E-02 2.10E-02 3.98E-02

Stomach Wall 6.22E-03 6.67E-03 1.04E-02 1.79E-02 3.41E-02

Right colon 6.37E-03 6.81E-03 1.14E-02 1.86E-02 3.62E-02

Rectum 1.87E-02 2.67E-02 3.65E-02 5.46E-02 9.76E-02

Heart Wall 6.32E-03 6.48E-03 1.09E-02 1.78E-02 3.41E-02

Kidneys 1.20E-02 1.30E-02 1.78E-02 2.83E-02 4.64E-02

Liver 6.28E-03 6.56E-03 1.08E-02 1.78E-02 3.41E-02

Lungs 6.61E-03 7.02E-03 1.13E-02 1.86E-02 3.60E-02

Ovaries 8.39E-03 1.02E-02 1.59E-02 2.93E-02 6.38E-02

Pancreas 6.46E-03 6.77E-03 1.13E-02 1.87E-02 3.64E-02

Salivary Glands 5.81E-03 6.47E-03 1.09E-02 1.81E-02 3.48E-02

Red Marrow 4.23E-03 4.46E-03 5.99E-03 8.73E-03 1.50E-02

Osteogenic Cells 1.21E-02 1.26E-02 1.37E-02 1.53E-02 2.05E-02

Spleen 6.54E-03 6.82E-03 1.12E-02 1.82E-02 3.51E-02

Thymus 6.05E-03 6.19E-03 1.04E-02 1.71E-02 3.26E-02

Thyroid 5.81E-03 6.47E-03 1.09E-02 1.81E-02 3.48E-02

Urinary Bladder Wall 1.14E-01 1.17E-01 1.72E-01 2.60E-01 4.69E-01

Uterus 1.64E-02 2.36E-02 4.04E-02 6.50E-02 1.12E-01

Total Body 6.88E-03 7.15E-03 1.18E-02 1.93E-02 3.72E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.36E-03 7.53E-03 1.21E-02 1.97E-02 3.73E-02

Brain 5.54E-03 6.39E-03 1.07E-02 1.78E-02 3.34E-02

Breasts 4.91E-03 5.41E-03 ----- ----- -----

Esophagus 5.37E-03 6.41E-03 1.09E-02 1.81E-02 3.49E-02

Eyes 5.54E-03 6.39E-03 1.07E-02 1.78E-02 3.34E-02

Gallbladder Wall 5.56E-03 6.26E-03 9.61E-03 1.74E-02 3.33E-02

Left colon 6.05E-03 6.85E-03 1.10E-02 1.88E-02 3.77E-02

Small Intestine 5.90E-03 7.27E-03 1.26E-02 2.11E-02 4.06E-02

Stomach Wall 5.57E-03 6.60E-03 1.04E-02 1.79E-02 3.41E-02

Right colon 5.67E-03 6.73E-03 1.14E-02 1.84E-02 3.59E-02

Rectum 1.34E-02 1.87E-02 2.86E-02 4.44E-02 8.17E-02

Heart Wall 5.62E-03 6.41E-03 1.09E-02 1.78E-02 3.41E-02

Kidneys 1.11E-02 1.28E-02 1.79E-02 2.83E-02 4.64E-02

Liver 5.63E-03 6.49E-03 1.08E-02 1.78E-02 3.41E-02

Lungs 5.90E-03 6.96E-03 1.13E-02 1.86E-02 3.60E-02

Ovaries 8.39E-03 1.02E-02 1.59E-02 2.93E-02 6.38E-02

Pancreas 5.81E-03 6.68E-03 1.13E-02 1.87E-02 3.63E-02

Prostate 9.16E-03 1.24E-02 3.81E-02 3.47E-02 6.78E-02

Salivary Glands 5.36E-03 6.40E-03 1.09E-02 1.81E-02 3.48E-02

Red Marrow 3.75E-03 4.38E-03 6.65E-03 1.04E-02 1.96E-02

Osteogenic Cells 1.09E-02 1.27E-02 1.75E-02 2.51E-02 4.69E-02

Spleen 5.82E-03 6.70E-03 1.11E-02 1.82E-02 3.49E-02

Testes 4.49E-03 5.90E-03 1.01E-02 1.59E-02 3.27E-02

Thymus 5.37E-03 6.13E-03 1.04E-02 1.71E-02 3.26E-02

Thyroid 5.36E-03 6.40E-03 1.09E-02 1.81E-02 3.48E-02

Urinary Bladder Wall 1.11E-01 1.25E-01 1.85E-01 2.78E-01 5.06E-01

Uterus 1.64E-02 2.36E-02 4.04E-02 6.50E-02 1.12E-01

Total Body 6.18E-03 7.08E-03 1.19E-02 1.93E-02 3.73E-02

Effective Dose 9.56E-03 1.11E-02 1.66E-02 2.62E-02 4.92E-02

Radiation Dose Estimates (mSv/MBq) for 125I Iodide, 5% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.67E-03 8.08E-03 1.35E-02 2.24E-02 4.48E-02

Brain 3.61E-03 4.74E-03 8.25E-03 1.38E-02 2.65E-02

Esophagus 3.45E-01 4.53E-01 6.89E-01 1.31E+00 1.70E+00

Eyes 3.48E-03 4.49E-03 7.89E-03 1.31E-02 2.45E-02

Gallbladder Wall 4.18E-03 5.12E-03 8.40E-03 1.53E-02 3.24E-02

Left colon 9.45E-03 1.21E-02 1.88E-02 3.07E-02 5.72E-02

Small Intestine 4.84E-02 5.98E-02 9.70E-02 1.40E-01 1.99E-01

Stomach Wall 8.86E-02 1.09E-01 1.72E-01 2.43E-01 3.24E-01

Right colon 5.15E-03 8.02E-03 1.26E-02 2.03E-02 3.90E-02

Rectum 7.70E-03 1.06E-02 2.04E-02 3.35E-02 6.38E-02

Heart Wall 1.03E-02 1.46E-02 2.60E-02 4.14E-02 7.96E-02

Kidneys 9.11E-03 1.13E-02 1.64E-02 2.66E-02 4.49E-02

Liver 4.78E-03 6.55E-03 1.17E-02 2.00E-02 4.07E-02

Lungs 5.75E-02 7.40E-02 1.12E-01 1.50E-01 2.64E-01

Pancreas 1.85E-02 2.35E-02 3.91E-02 6.19E-02 1.10E-01

Prostate 7.79E-03 1.08E-02 3.52E-02 3.14E-02 6.10E-02

Salivary Glands 9.00E-03 1.34E-02 2.41E-02 4.16E-02 7.89E-02

Red Marrow 1.03E-02 1.23E-02 1.42E-02 1.81E-02 2.79E-02

Osteogenic Cells 2.98E-02 3.18E-02 3.93E-02 5.06E-02 7.71E-02

Spleen 7.27E-03 1.00E-02 1.77E-02 2.94E-02 5.76E-02

Testes 3.20E-03 4.24E-03 7.40E-03 1.15E-02 2.42E-02

Thymus 6.73E-02 1.50E-01 3.30E-01 7.07E-01 1.93E+00

Thyroid 4.60E+01 6.78E+01 8.67E+01 1.67E+02 2.52E+02

Urinary Bladder Wall 1.03E-01 1.25E-01 1.88E-01 2.81E-01 5.14E-01

Total Body 2.53E-02 3.05E-02 4.71E-02 6.96E-02 1.13E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.07E-02 1.14E-02 1.87E-02 3.10E-02 5.56E-02

Brain 4.65E-03 4.87E-03 8.50E-03 1.43E-02 2.68E-02

Breasts 6.24E-03 5.53E-03 ----- ----- -----

Esophagus 4.75E-01 5.19E-01 7.06E-01 8.04E-01 6.66E-01

Eyes 4.44E-03 4.76E-03 7.79E-03 1.40E-02 2.57E-02

Gallbladder Wall 6.60E-03 7.13E-03 1.14E-02 2.00E-02 3.91E-02

Left colon 8.99E-03 1.01E-02 1.77E-02 2.98E-02 5.83E-02

Small Intestine 5.84E-02 6.07E-02 9.69E-02 1.41E-01 2.01E-01

Stomach Wall 9.74E-02 1.10E-01 1.72E-01 2.43E-01 3.25E-01

Right colon 6.36E-03 6.89E-03 1.08E-02 1.77E-02 3.38E-02

Rectum 1.67E-02 2.44E-02 3.34E-02 4.98E-02 8.91E-02

Heart Wall 1.36E-02 1.41E-02 2.51E-02 4.26E-02 7.76E-02

Kidneys 1.11E-02 1.23E-02 1.74E-02 2.83E-02 4.79E-02

Liver 5.86E-03 6.15E-03 1.07E-02 1.86E-02 3.74E-02

Lungs 6.21E-02 5.61E-02 9.08E-02 1.35E-01 2.06E-01

Ovaries 7.51E-03 9.25E-03 1.49E-02 2.77E-02 1.01E-01

Pancreas 1.34E-02 1.54E-02 2.55E-02 4.22E-02 7.03E-02

Salivary Glands 1.41E-02 1.71E-02 2.75E-02 4.52E-02 8.73E-02

Red Marrow 2.04E-02 1.47E-02 1.52E-02 1.68E-02 2.18E-02

Osteogenic Cells 4.65E-02 3.33E-02 3.45E-02 3.77E-02 4.12E-02

Spleen 1.28E-02 1.41E-02 2.30E-02 3.66E-02 6.53E-02

Thymus 2.03E-01 2.98E-01 7.92E-01 1.39E+00 2.23E+00

Thyroid 5.36E+01 6.79E+01 8.70E+01 1.66E+02 2.55E+02

Urinary Bladder Wall 1.08E-01 1.11E-01 1.62E-01 2.45E-01 4.41E-01

Uterus 1.64E-02 2.32E-02 4.08E-02 6.49E-02 1.11E-01

Total Body 3.76E-02 3.24E-02 4.66E-02 6.89E-02 1.12E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.18E-03 9.75E-03 1.61E-02 2.67E-02 5.02E-02

Brain 4.13E-03 4.81E-03 8.37E-03 1.41E-02 2.67E-02

Breasts 6.24E-03 5.53E-03 ----- ----- -----

Esophagus 4.10E-01 4.86E-01 6.97E-01 1.06E+00 1.18E+00

Eyes 3.96E-03 4.63E-03 7.84E-03 1.35E-02 2.51E-02

Gallbladder Wall 5.39E-03 6.13E-03 9.91E-03 1.76E-02 3.58E-02

Left colon 9.22E-03 1.11E-02 1.82E-02 3.03E-02 5.77E-02

Small Intestine 5.34E-02 6.03E-02 9.70E-02 1.41E-01 2.00E-01

Stomach Wall 9.30E-02 1.10E-01 1.72E-01 2.43E-01 3.25E-01

Right colon 5.76E-03 7.46E-03 1.17E-02 1.90E-02 3.64E-02

Rectum 1.22E-02 1.75E-02 2.69E-02 4.16E-02 7.65E-02

Heart Wall 1.19E-02 1.44E-02 2.56E-02 4.20E-02 7.86E-02

Kidneys 1.01E-02 1.18E-02 1.69E-02 2.75E-02 4.64E-02

Liver 5.32E-03 6.35E-03 1.12E-02 1.93E-02 3.90E-02

Lungs 5.98E-02 6.51E-02 1.02E-01 1.43E-01 2.35E-01

Ovaries 7.51E-03 9.25E-03 1.49E-02 2.77E-02 1.01E-01

Pancreas 1.60E-02 1.95E-02 3.23E-02 5.21E-02 9.02E-02

Prostate 7.79E-03 1.08E-02 3.52E-02 3.14E-02 6.10E-02

Salivary Glands 1.16E-02 1.53E-02 2.58E-02 4.34E-02 8.31E-02

Red Marrow 1.53E-02 1.35E-02 1.47E-02 1.74E-02 2.49E-02

Osteogenic Cells 3.82E-02 3.25E-02 3.69E-02 4.41E-02 5.91E-02

Spleen 1.00E-02 1.21E-02 2.04E-02 3.30E-02 6.15E-02

Testes 3.20E-03 4.24E-03 7.40E-03 1.15E-02 2.42E-02

Thymus 1.35E-01 2.24E-01 5.61E-01 1.05E+00 2.08E+00

Thyroid 4.98E+01 6.79E+01 8.68E+01 1.67E+02 2.54E+02

Urinary Bladder Wall 1.05E-01 1.18E-01 1.75E-01 2.63E-01 4.77E-01

Uterus 1.64E-02 2.32E-02 4.08E-02 6.49E-02 1.11E-01

Total Body 3.14E-02 3.14E-02 4.69E-02 6.93E-02 1.13E-01

Effective Dose 2.14E+00 2.90E+00 3.73E+00 7.12E+00 1.08E+01

Radiation Dose Estimates (mSv/MBq) for 125I Iodide, 15% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.83E-03 8.40E-03 1.43E-02 2.46E-02 5.21E-02

Brain 3.91E-03 5.32E-03 9.70E-03 1.70E-02 3.23E-02

Esophagus 1.02E+00 1.33E+00 2.04E+00 4.44E+00 4.92E+00

Eyes 3.52E-03 4.56E-03 8.61E-03 1.44E-02 2.62E-02

Gallbladder Wall 4.43E-03 5.44E-03 9.20E-03 1.68E-02 3.85E-02

Left colon 9.64E-03 1.25E-02 1.97E-02 3.28E-02 5.99E-02

Small Intestine 4.84E-02 5.98E-02 9.71E-02 1.41E-01 2.00E-01

Stomach Wall 9.09E-02 1.12E-01 1.79E-01 2.56E-01 3.47E-01

Right colon 5.47E-03 8.59E-03 1.36E-02 2.24E-02 4.19E-02

Rectum 7.39E-03 1.01E-02 1.93E-02 3.17E-02 6.05E-02

Heart Wall 1.96E-02 2.85E-02 5.17E-02 9.05E-02 1.56E-01

Kidneys 8.67E-03 1.09E-02 1.59E-02 2.65E-02 4.54E-02

Liver 6.06E-03 8.64E-03 1.64E-02 3.04E-02 6.05E-02

Lungs 1.62E-01 2.07E-01 3.14E-01 4.70E-01 7.09E-01

Pancreas 1.88E-02 2.41E-02 4.08E-02 6.51E-02 1.19E-01

Prostate 7.34E-03 1.02E-02 3.23E-02 2.95E-02 5.78E-02

Salivary Glands 2.01E-02 3.12E-02 5.70E-02 1.12E-01 1.84E-01

Red Marrow 2.59E-02 3.01E-02 3.16E-02 4.06E-02 4.81E-02

Osteogenic Cells 7.46E-02 7.54E-02 8.62E-02 1.12E-01 1.23E-01

Spleen 8.01E-03 1.10E-02 2.01E-02 3.45E-02 6.76E-02

Testes 3.18E-03 4.21E-03 7.27E-03 1.14E-02 2.38E-02

Thymus 1.95E-01 4.39E-01 9.76E-01 2.40E+00 5.62E+00

Thyroid 1.38E+02 2.02E+02 2.60E+02 5.75E+02 7.43E+02

Urinary Bladder Wall 9.17E-02 1.12E-01 1.69E-01 2.52E-01 4.61E-01

Total Body 6.59E-02 7.84E-02 1.20E-01 1.96E-01 2.67E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.13E-02 1.23E-02 1.97E-02 3.32E-02 5.89E-02

Brain 5.27E-03 5.52E-03 1.04E-02 1.86E-02 3.31E-02

Breasts 1.17E-02 8.80E-03 ----- ----- -----

Esophagus 1.42E+00 1.54E+00 2.10E+00 2.73E+00 1.90E+00

Eyes 4.62E-03 5.20E-03 8.31E-03 1.76E-02 2.99E-02

Gallbladder Wall 6.69E-03 7.13E-03 1.15E-02 2.03E-02 4.07E-02

Left colon 8.99E-03 1.01E-02 1.79E-02 2.99E-02 5.93E-02

Small Intestine 5.84E-02 6.07E-02 9.69E-02 1.41E-01 2.02E-01

Stomach Wall 9.81E-02 1.11E-01 1.74E-01 2.48E-01 3.33E-01

Right colon 6.37E-03 6.89E-03 1.08E-02 1.78E-02 3.40E-02

Rectum 1.54E-02 2.23E-02 3.06E-02 4.58E-02 8.24E-02

Heart Wall 3.00E-02 3.07E-02 5.59E-02 1.07E-01 1.68E-01

Kidneys 1.06E-02 1.18E-02 1.68E-02 2.75E-02 4.69E-02

Liver 7.48E-03 7.75E-03 1.41E-02 2.71E-02 5.14E-02

Lungs 1.74E-01 1.55E-01 2.52E-01 4.25E-01 5.43E-01

Ovaries 7.29E-03 8.89E-03 1.44E-02 2.65E-02 1.79E-01

Pancreas 1.35E-02 1.57E-02 2.59E-02 4.32E-02 7.24E-02

Salivary Glands 3.42E-02 4.19E-02 6.71E-02 1.25E-01 2.09E-01

Red Marrow 5.48E-02 3.71E-02 3.66E-02 4.22E-02 4.30E-02

Osteogenic Cells 1.21E-01 8.02E-02 8.29E-02 1.01E-01 9.13E-02

Spleen 1.30E-02 1.44E-02 2.38E-02 3.83E-02 7.02E-02

Thymus 6.00E-01 8.80E-01 2.36E+00 4.75E+00 6.53E+00

Thyroid 1.61E+02 2.02E+02 2.61E+02 5.70E+02 7.51E+02

Urinary Bladder Wall 9.63E-02 9.90E-02 1.45E-01 2.19E-01 3.96E-01

Uterus 1.53E-02 2.15E-02 3.78E-02 6.01E-02 1.03E-01

Total Body 9.95E-02 8.36E-02 1.18E-01 1.94E-01 2.63E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.58E-03 1.03E-02 1.70E-02 2.89E-02 5.55E-02

Brain 4.59E-03 5.42E-03 1.01E-02 1.78E-02 3.27E-02

Breasts 1.17E-02 8.80E-03 ----- ----- -----

Esophagus 1.22E+00 1.43E+00 2.07E+00 3.58E+00 3.41E+00

Eyes 4.07E-03 4.88E-03 8.46E-03 1.60E-02 2.80E-02

Gallbladder Wall 5.56E-03 6.28E-03 1.04E-02 1.86E-02 3.96E-02

Left colon 9.31E-03 1.13E-02 1.88E-02 3.14E-02 5.96E-02

Small Intestine 5.34E-02 6.02E-02 9.70E-02 1.41E-01 2.01E-01

Stomach Wall 9.45E-02 1.11E-01 1.76E-01 2.52E-01 3.40E-01

Right colon 5.92E-03 7.74E-03 1.22E-02 2.01E-02 3.79E-02

Rectum 1.14E-02 1.62E-02 2.49E-02 3.87E-02 7.15E-02

Heart Wall 2.48E-02 2.96E-02 5.38E-02 9.89E-02 1.62E-01

Kidneys 9.64E-03 1.13E-02 1.63E-02 2.70E-02 4.62E-02

Liver 6.77E-03 8.20E-03 1.52E-02 2.87E-02 5.59E-02

Lungs 1.68E-01 1.81E-01 2.83E-01 4.47E-01 6.26E-01

Ovaries 7.29E-03 8.89E-03 1.44E-02 2.65E-02 1.79E-01

Pancreas 1.62E-02 1.99E-02 3.33E-02 5.41E-02 9.56E-02

Prostate 7.34E-03 1.02E-02 3.23E-02 2.95E-02 5.78E-02

Salivary Glands 2.72E-02 3.66E-02 6.21E-02 1.18E-01 1.97E-01

Red Marrow 4.03E-02 3.36E-02 3.41E-02 4.14E-02 4.55E-02

Osteogenic Cells 9.78E-02 7.78E-02 8.45E-02 1.07E-01 1.07E-01

Spleen 1.05E-02 1.27E-02 2.19E-02 3.64E-02 6.89E-02

Testes 3.18E-03 4.21E-03 7.27E-03 1.14E-02 2.38E-02

Thymus 3.97E-01 6.60E-01 1.67E+00 3.58E+00 6.07E+00

Thyroid 1.49E+02 2.02E+02 2.61E+02 5.73E+02 7.47E+02

Urinary Bladder Wall 9.40E-02 1.06E-01 1.57E-01 2.36E-01 4.28E-01

Uterus 1.53E-02 2.15E-02 3.78E-02 6.01E-02 1.03E-01

Total Body 8.27E-02 8.10E-02 1.19E-01 1.95E-01 2.65E-01

Effective Dose 6.37E+00 8.61E+00 1.11E+01 2.43E+01 3.17E+01

Radiation Dose Estimates (mSv/MBq) for 125I Iodide, 25% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.97E-03 8.83E-03 1.51E-02 2.59E-02 5.95E-02

Brain 4.22E-03 5.90E-03 1.11E-02 1.91E-02 3.82E-02

Esophagus 1.70E+00 2.22E+00 3.38E+00 6.51E+00 8.18E+00

Eyes 3.57E-03 4.62E-03 9.33E-03 1.52E-02 2.80E-02

Gallbladder Wall 4.67E-03 1.37E-02 9.99E-03 1.79E-02 4.47E-02

Left colon 9.82E-03 1.02E-02 2.07E-02 3.42E-02 6.26E-02

Small Intestine 4.84E-02 8.77E-03 9.71E-02 1.41E-01 2.01E-01

Stomach Wall 9.31E-02 1.15E-01 1.85E-01 2.64E-01 3.69E-01

Right colon 5.78E-03 1.40E-01 1.46E-02 2.38E-02 4.48E-02

Rectum 7.11E-03 7.81E-03 1.82E-02 3.00E-02 5.73E-02

Heart Wall 2.89E-02 4.25E-02 7.73E-02 1.23E-01 2.33E-01

Kidneys 8.17E-03 1.06E-02 1.53E-02 2.58E-02 4.57E-02

Liver 7.33E-03 1.14E-02 2.10E-02 3.72E-02 8.06E-02

Lungs 2.66E-01 3.41E-01 5.15E-01 6.81E-01 1.16E+00

Pancreas 1.91E-02 2.18E-02 4.24E-02 6.71E-02 1.28E-01

Prostate 6.92E-03 9.04E-03 2.95E-02 2.78E-02 5.46E-02

Salivary Glands 3.12E-02 4.91E-02 8.99E-02 1.59E-01 2.91E-01

Red Marrow 4.15E-02 4.80E-02 4.91E-02 5.54E-02 6.85E-02

Osteogenic Cells 1.19E-01 1.19E-01 1.33E-01 1.52E-01 1.71E-01

Spleen 8.75E-03 1.19E-02 2.24E-02 3.78E-02 7.76E-02

Testes 3.16E-03 4.17E-03 7.14E-03 1.13E-02 2.34E-02

Thymus 3.23E-01 7.31E-01 1.62E+00 3.52E+00 9.37E+00

Thyroid 2.30E+02 3.38E+02 4.33E+02 8.44E+02 1.24E+03

Urinary Bladder Wall 8.14E-02 9.92E-02 1.50E-01 2.24E-01 4.10E-01

Total Body 1.07E-01 1.27E-01 1.93E-01 2.80E-01 4.24E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.20E-02 1.30E-02 2.06E-02 3.45E-02 6.23E-02

Brain 5.89E-03 6.16E-03 1.24E-02 2.14E-02 3.95E-02

Breasts 1.71E-02 1.21E-02 ----- ----- -----

Esophagus 2.36E+00 2.56E+00 3.49E+00 3.99E+00 3.16E+00

Eyes 4.81E-03 5.64E-03 8.84E-03 1.99E-02 3.41E-02

Gallbladder Wall 6.78E-03 9.74E-03 1.16E-02 2.04E-02 4.23E-02

Left colon 8.98E-03 9.00E-03 1.80E-02 2.98E-02 6.04E-02

Small Intestine 5.84E-02 8.36E-03 9.68E-02 1.41E-01 2.02E-01

Stomach Wall 9.89E-02 1.11E-01 1.76E-01 2.50E-01 3.41E-01

Right colon 6.37E-03 1.42E-01 1.07E-02 1.78E-02 3.42E-02

Rectum 1.41E-02 1.98E-02 2.79E-02 4.20E-02 7.60E-02

Heart Wall 4.64E-02 4.76E-02 8.68E-02 1.50E-01 2.59E-01

Kidneys 9.99E-03 1.14E-02 1.61E-02 2.64E-02 4.57E-02

Liver 9.09E-03 9.87E-03 1.75E-02 3.27E-02 6.55E-02

Lungs 2.87E-01 2.54E-01 4.13E-01 6.16E-01 8.86E-01

Ovaries 7.07E-03 7.56E-03 1.39E-02 2.55E-02 2.58E-01

Pancreas 1.37E-02 1.27E-02 2.63E-02 4.38E-02 7.45E-02

Salivary Glands 5.43E-02 6.70E-02 1.07E-01 1.77E-01 3.33E-01

Red Marrow 8.92E-02 5.98E-02 5.81E-02 5.89E-02 6.46E-02

Osteogenic Cells 1.96E-01 1.27E-01 1.31E-01 1.43E-01 1.42E-01

Spleen 1.32E-02 1.43E-02 2.45E-02 3.94E-02 7.51E-02

Thymus 9.96E-01 1.47E+00 3.93E+00 6.97E+00 1.09E+01

Thyroid 2.68E+02 3.38E+02 4.35E+02 8.37E+02 1.25E+03

Urinary Bladder Wall 8.55E-02 8.75E-02 1.29E-01 1.95E-01 3.53E-01

Uterus 1.43E-02 1.76E-02 3.50E-02 5.56E-02 9.56E-02

Total Body 1.61E-01 1.35E-01 1.90E-01 2.76E-01 4.17E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.96E-03 1.09E-02 1.79E-02 3.02E-02 6.09E-02

Brain 5.05E-03 6.03E-03 1.18E-02 2.03E-02 3.89E-02

Breasts 1.71E-02 1.21E-02 ----- ----- -----

Esophagus 2.03E+00 2.39E+00 3.44E+00 5.25E+00 5.67E+00

Eyes 4.19E-03 5.13E-03 9.08E-03 1.76E-02 3.10E-02

Gallbladder Wall 5.72E-03 1.17E-02 1.08E-02 1.92E-02 4.35E-02

Left colon 9.40E-03 9.61E-03 1.94E-02 3.20E-02 6.15E-02

Small Intestine 5.34E-02 8.56E-03 9.70E-02 1.41E-01 2.01E-01

Stomach Wall 9.60E-02 1.13E-01 1.80E-01 2.57E-01 3.55E-01

Right colon 6.08E-03 1.41E-01 1.27E-02 2.08E-02 3.95E-02

Rectum 1.06E-02 1.38E-02 2.31E-02 3.60E-02 6.67E-02

Heart Wall 3.76E-02 4.50E-02 8.21E-02 1.36E-01 2.46E-01

Kidneys 9.08E-03 1.10E-02 1.57E-02 2.61E-02 4.57E-02

Liver 8.21E-03 1.06E-02 1.93E-02 3.50E-02 7.30E-02

Lungs 2.76E-01 2.97E-01 4.64E-01 6.48E-01 1.02E+00

Ovaries 7.07E-03 7.56E-03 1.39E-02 2.55E-02 2.58E-01

Pancreas 1.64E-02 1.72E-02 3.43E-02 5.55E-02 1.01E-01

Prostate 6.92E-03 9.04E-03 2.95E-02 2.78E-02 5.46E-02

Salivary Glands 4.28E-02 5.81E-02 9.83E-02 1.68E-01 3.12E-01

Red Marrow 6.53E-02 5.39E-02 5.36E-02 5.72E-02 6.65E-02

Osteogenic Cells 1.57E-01 1.23E-01 1.32E-01 1.48E-01 1.56E-01

Spleen 1.10E-02 1.31E-02 2.35E-02 3.86E-02 7.64E-02

Testes 3.16E-03 4.17E-03 7.14E-03 1.13E-02 2.34E-02

Thymus 6.60E-01 1.10E+00 2.78E+00 5.25E+00 1.01E+01

Thyroid 2.49E+02 3.38E+02 4.34E+02 8.41E+02 1.25E+03

Urinary Bladder Wall 8.35E-02 9.34E-02 1.39E-01 2.10E-01 3.82E-01

Uterus 1.43E-02 1.76E-02 3.50E-02 5.56E-02 9.56E-02

Total Body 1.34E-01 1.31E-01 1.91E-01 2.78E-01 4.20E-01

Effective Dose 1.06E+01 1.44E+01 1.85E+01 3.57E+01 5.29E+01

Radiation Dose Estimates (mSv/MBq) for 125I Iodide, 35% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.13E-03 9.02E-03 1.60E-02 2.77E-02 6.71E-02

Brain 4.52E-03 6.49E-03 1.26E-02 2.18E-02 4.42E-02

Esophagus 2.37E+00 3.11E+00 4.73E+00 9.12E+00 1.15E+01

Eyes 3.62E-03 4.70E-03 1.00E-02 1.63E-02 2.98E-02

Gallbladder Wall 4.91E-03 6.08E-03 1.08E-02 1.91E-02 5.11E-02

Left colon 1.00E-02 1.32E-02 2.16E-02 3.60E-02 6.53E-02

Small Intestine 4.84E-02 5.98E-02 9.72E-02 1.41E-01 2.01E-01

Stomach Wall 9.54E-02 1.18E-01 1.92E-01 2.75E-01 3.92E-01

Right colon 6.10E-03 9.75E-03 1.56E-02 2.55E-02 4.77E-02

Rectum 6.82E-03 9.19E-03 1.71E-02 2.83E-02 5.42E-02

Heart Wall 3.82E-02 5.65E-02 1.03E-01 1.64E-01 3.11E-01

Kidneys 7.74E-03 9.89E-03 1.48E-02 2.54E-02 4.63E-02

Liver 8.60E-03 1.29E-02 2.56E-02 4.58E-02 1.01E-01

Lungs 3.71E-01 4.75E-01 7.16E-01 9.46E-01 1.62E+00

Pancreas 1.94E-02 2.53E-02 4.40E-02 6.97E-02 1.37E-01

Prostate 6.50E-03 9.04E-03 2.67E-02 2.61E-02 5.15E-02

Salivary Glands 4.23E-02 6.71E-02 1.23E-01 2.17E-01 4.00E-01

Red Marrow 5.71E-02 6.60E-02 6.66E-02 7.41E-02 8.93E-02

Osteogenic Cells 1.64E-01 1.63E-01 1.80E-01 2.03E-01 2.18E-01

Spleen 9.49E-03 1.30E-02 2.48E-02 4.20E-02 8.78E-02

Testes 3.14E-03 4.14E-03 7.02E-03 1.12E-02 2.30E-02

Thymus 4.51E-01 1.02E+00 2.27E+00 4.92E+00 1.32E+01

Thyroid 3.22E+02 4.73E+02 6.07E+02 1.18E+03 1.75E+03

Urinary Bladder Wall 7.11E-02 8.72E-02 1.31E-01 1.96E-01 3.60E-01

Total Body 1.47E-01 1.75E-01 2.65E-01 3.85E-01 5.83E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.26E-02 1.40E-02 2.16E-02 3.62E-02 6.57E-02

Brain 6.50E-03 6.83E-03 1.43E-02 2.49E-02 4.60E-02

Breasts 2.26E-02 1.54E-02 ----- ----- -----

Esophagus 3.30E+00 3.59E+00 4.88E+00 5.59E+00 4.43E+00

Eyes 5.00E-03 6.09E-03 9.36E-03 2.29E-02 3.83E-02

Gallbladder Wall 6.87E-03 7.13E-03 1.18E-02 2.07E-02 4.40E-02

Left colon 8.98E-03 1.01E-02 1.82E-02 2.98E-02 6.16E-02

Small Intestine 5.83E-02 6.06E-02 9.67E-02 1.41E-01 2.02E-01

Stomach Wall 9.96E-02 1.12E-01 1.78E-01 2.54E-01 3.50E-01

Right colon 6.37E-03 6.89E-03 1.07E-02 1.79E-02 3.44E-02

Rectum 1.29E-02 1.82E-02 2.53E-02 3.83E-02 6.97E-02

Heart Wall 6.27E-02 6.44E-02 1.18E-01 2.04E-01 3.52E-01

Kidneys 9.46E-03 1.06E-02 1.54E-02 2.55E-02 4.48E-02

Liver 1.07E-02 1.10E-02 2.10E-02 3.97E-02 7.99E-02

Lungs 3.99E-01 3.54E-01 5.75E-01 8.56E-01 1.23E+00

Ovaries 6.86E-03 8.19E-03 1.34E-02 2.44E-02 3.39E-01

Pancreas 1.38E-02 1.62E-02 2.66E-02 4.45E-02 7.67E-02

Salivary Glands 7.44E-02 9.21E-02 1.46E-01 2.43E-01 4.58E-01

Red Marrow 1.24E-01 8.25E-02 7.96E-02 8.00E-02 8.64E-02

Osteogenic Cells 2.70E-01 1.75E-01 1.80E-01 1.96E-01 1.94E-01

Spleen 1.34E-02 1.49E-02 2.52E-02 4.08E-02 8.01E-02

Thymus 1.39E+00 2.06E+00 5.50E+00 9.77E+00 1.53E+01

Thyroid 3.75E+02 4.74E+02 6.09E+02 1.17E+03 1.77E+03

Urinary Bladder Wall 7.48E-02 7.71E-02 1.13E-01 1.71E-01 3.10E-01

Uterus 1.34E-02 1.82E-02 3.21E-02 5.11E-02 8.82E-02

Total Body 2.23E-01 1.87E-01 2.62E-01 3.80E-01 5.73E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 9.36E-03 1.15E-02 1.88E-02 3.20E-02 6.64E-02

Brain 5.51E-03 6.66E-03 1.34E-02 2.33E-02 4.51E-02

Breasts 2.26E-02 1.54E-02 ----- ----- -----

Esophagus 2.84E+00 3.35E+00 4.81E+00 7.35E+00 7.96E+00

Eyes 4.31E-03 5.40E-03 9.70E-03 1.96E-02 3.41E-02

Gallbladder Wall 5.89E-03 6.60E-03 1.13E-02 1.99E-02 4.75E-02

Left colon 9.49E-03 1.16E-02 1.99E-02 3.29E-02 6.34E-02

Small Intestine 5.33E-02 6.02E-02 9.70E-02 1.41E-01 2.02E-01

Stomach Wall 9.75E-02 1.15E-01 1.85E-01 2.64E-01 3.71E-01

Right colon 6.23E-03 8.32E-03 1.31E-02 2.17E-02 4.10E-02

Rectum 9.86E-03 1.37E-02 2.12E-02 3.33E-02 6.19E-02

Heart Wall 5.05E-02 6.05E-02 1.10E-01 1.84E-01 3.32E-01

Kidneys 8.60E-03 1.02E-02 1.51E-02 2.54E-02 4.55E-02

Liver 9.65E-03 1.19E-02 2.33E-02 4.28E-02 9.04E-02

Lungs 3.85E-01 4.14E-01 6.45E-01 9.01E-01 1.43E+00

Ovaries 6.86E-03 8.19E-03 1.34E-02 2.44E-02 3.39E-01

Pancreas 1.66E-02 2.08E-02 3.53E-02 5.71E-02 1.07E-01

Prostate 6.50E-03 9.04E-03 2.67E-02 2.61E-02 5.15E-02

Salivary Glands 5.83E-02 7.96E-02 1.35E-01 2.30E-01 4.29E-01

Red Marrow 9.03E-02 7.43E-02 7.31E-02 7.70E-02 8.78E-02

Osteogenic Cells 2.17E-01 1.69E-01 1.80E-01 1.99E-01 2.06E-01

Spleen 1.14E-02 1.40E-02 2.50E-02 4.14E-02 8.40E-02

Testes 3.14E-03 4.14E-03 7.02E-03 1.12E-02 2.30E-02

Thymus 9.22E-01 1.54E+00 3.88E+00 7.34E+00 1.42E+01

Thyroid 3.49E+02 4.74E+02 6.08E+02 1.18E+03 1.76E+03

Urinary Bladder Wall 7.29E-02 8.21E-02 1.22E-01 1.84E-01 3.35E-01

Uterus 1.34E-02 1.82E-02 3.21E-02 5.11E-02 8.82E-02

Total Body 1.85E-01 1.81E-01 2.64E-01 3.83E-01 5.78E-01

Effective Dose 1.48E+01 2.01E+01 2.59E+01 5.00E+01 7.44E+01

Radiation Dose Estimates (mSv/MBq) for 125I Iodide, 45% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.29E-03 9.34E-03 1.68E-02 2.95E-02 7.44E-02

Brain 4.84E-03 7.08E-03 1.40E-02 2.44E-02 5.00E-02

Esophagus 3.06E+00 4.00E+00 6.06E+00 1.17E+01 1.47E+01

Eyes 3.66E-03 4.77E-03 1.08E-02 1.73E-02 3.15E-02

Gallbladder Wall 5.16E-03 6.40E-03 1.16E-02 2.04E-02 5.72E-02

Left colon 1.02E-02 1.36E-02 2.26E-02 3.78E-02 6.79E-02

Small Intestine 4.84E-02 5.97E-02 9.73E-02 1.41E-01 2.02E-01

Stomach Wall 9.77E-02 1.22E-01 1.98E-01 2.85E-01 4.14E-01

Right colon 6.42E-03 1.03E-02 1.66E-02 2.73E-02 5.06E-02

Rectum 6.54E-03 8.75E-03 1.61E-02 2.65E-02 5.10E-02

Heart Wall 4.77E-02 7.05E-02 1.28E-01 2.04E-01 3.87E-01

Kidneys 7.30E-03 9.43E-03 1.43E-02 2.51E-02 4.68E-02

Liver 9.89E-03 1.50E-02 3.01E-02 5.44E-02 1.21E-01

Lungs 4.77E-01 6.09E-01 9.16E-01 1.21E+00 2.06E+00

Pancreas 1.97E-02 2.60E-02 4.56E-02 7.23E-02 1.45E-01

Prostate 6.07E-03 8.46E-03 2.39E-02 2.44E-02 4.84E-02

Salivary Glands 5.36E-02 8.50E-02 1.55E-01 2.75E-01 5.05E-01

Red Marrow 7.30E-02 8.40E-02 8.39E-02 9.25E-02 1.09E-01

Osteogenic Cells 2.10E-01 2.07E-01 2.26E-01 2.53E-01 2.65E-01

Spleen 1.02E-02 1.40E-02 2.71E-02 4.62E-02 9.77E-02

Testes 3.13E-03 4.10E-03 6.90E-03 1.11E-02 2.26E-02

Thymus 5.81E-01 1.31E+00 2.90E+00 6.31E+00 1.69E+01

Thyroid 4.16E+02 6.09E+02 7.78E+02 1.52E+03 2.24E+03

Urinary Bladder Wall 6.08E-02 7.47E-02 1.12E-01 1.69E-01 3.10E-01

Total Body 1.89E-01 2.23E-01 3.37E-01 4.89E-01 7.37E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.32E-02 1.49E-02 2.26E-02 3.79E-02 6.91E-02

Brain 7.13E-03 7.48E-03 1.62E-02 2.84E-02 5.22E-02

Breasts 2.81E-02 1.87E-02 ----- ----- -----

Esophagus 4.25E+00 4.62E+00 6.26E+00 7.16E+00 5.66E+00

Eyes 5.20E-03 6.54E-03 9.87E-03 2.58E-02 4.25E-02

Gallbladder Wall 6.97E-03 7.13E-03 1.19E-02 2.09E-02 4.56E-02

Left colon 8.98E-03 1.01E-02 1.84E-02 2.97E-02 6.27E-02

Small Intestine 5.83E-02 6.05E-02 9.66E-02 1.41E-01 2.02E-01

Stomach Wall 1.00E-01 1.13E-01 1.79E-01 2.58E-01 3.58E-01

Right colon 6.37E-03 6.90E-03 1.07E-02 1.80E-02 3.45E-02

Rectum 1.17E-02 1.62E-02 2.26E-02 3.45E-02 6.33E-02

Heart Wall 7.94E-02 8.13E-02 1.48E-01 2.57E-01 4.42E-01

Kidneys 8.92E-03 1.01E-02 1.48E-02 2.46E-02 4.38E-02

Liver 1.24E-02 1.26E-02 2.44E-02 4.67E-02 9.39E-02

Lungs 5.13E-01 4.53E-01 7.34E-01 1.09E+00 1.57E+00

Ovaries 6.65E-03 7.84E-03 1.29E-02 2.34E-02 4.17E-01

Pancreas 1.39E-02 1.64E-02 2.70E-02 4.53E-02 7.88E-02

Salivary Glands 9.48E-02 1.17E-01 1.86E-01 3.08E-01 5.80E-01

Red Marrow 1.59E-01 1.05E-01 1.01E-01 1.01E-01 1.08E-01

Osteogenic Cells 3.46E-01 2.22E-01 2.28E-01 2.48E-01 2.44E-01

Spleen 1.36E-02 1.52E-02 2.59E-02 4.21E-02 8.50E-02

Thymus 1.80E+00 2.64E+00 7.05E+00 1.25E+01 1.96E+01

Thyroid 4.84E+02 6.10E+02 7.81E+02 1.50E+03 2.26E+03

Urinary Bladder Wall 6.40E-02 6.61E-02 9.70E-02 1.47E-01 2.68E-01

Uterus 1.24E-02 1.66E-02 2.93E-02 4.66E-02 8.09E-02

Total Body 2.86E-01 2.39E-01 3.33E-01 4.82E-01 7.24E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 9.76E-03 1.21E-02 1.97E-02 3.37E-02 7.17E-02

Brain 5.98E-03 7.28E-03 1.51E-02 2.64E-02 5.11E-02

Breasts 2.81E-02 1.87E-02 ----- ----- -----

Esophagus 3.66E+00 4.31E+00 6.16E+00 9.43E+00 1.02E+01

Eyes 4.43E-03 5.65E-03 1.03E-02 2.16E-02 3.70E-02

Gallbladder Wall 6.06E-03 6.76E-03 1.17E-02 2.07E-02 5.14E-02

Left colon 9.59E-03 1.18E-02 2.05E-02 3.38E-02 6.53E-02

Small Intestine 5.33E-02 6.01E-02 9.70E-02 1.41E-01 2.02E-01

Stomach Wall 9.90E-02 1.17E-01 1.89E-01 2.72E-01 3.86E-01

Right colon 6.40E-03 8.61E-03 1.36E-02 2.26E-02 4.25E-02

Rectum 9.10E-03 1.25E-02 1.93E-02 3.05E-02 5.72E-02

Heart Wall 6.36E-02 7.59E-02 1.38E-01 2.30E-01 4.15E-01

Kidneys 8.11E-03 9.75E-03 1.46E-02 2.48E-02 4.53E-02

Liver 1.11E-02 1.38E-02 2.73E-02 5.05E-02 1.07E-01

Lungs 4.95E-01 5.31E-01 8.25E-01 1.15E+00 1.82E+00

Ovaries 6.65E-03 7.84E-03 1.29E-02 2.34E-02 4.17E-01

Pancreas 1.68E-02 2.12E-02 3.63E-02 5.88E-02 1.12E-01

Prostate 6.07E-03 8.46E-03 2.39E-02 2.44E-02 4.84E-02

Salivary Glands 7.42E-02 1.01E-01 1.70E-01 2.91E-01 5.42E-01

Red Marrow 1.16E-01 9.46E-02 9.23E-02 9.67E-02 1.09E-01

Osteogenic Cells 2.78E-01 2.15E-01 2.27E-01 2.51E-01 2.54E-01

Spleen 1.19E-02 1.46E-02 2.65E-02 4.42E-02 9.14E-02

Testes 3.13E-03 4.10E-03 6.90E-03 1.11E-02 2.26E-02

Thymus 1.19E+00 1.98E+00 4.98E+00 9.42E+00 1.82E+01

Thyroid 4.50E+02 6.09E+02 7.80E+02 1.51E+03 2.25E+03

Urinary Bladder Wall 6.24E-02 7.04E-02 1.05E-01 1.58E-01 2.89E-01

Uterus 1.24E-02 1.66E-02 2.93E-02 4.66E-02 8.09E-02

Total Body 2.37E-01 2.31E-01 3.35E-01 4.86E-01 7.31E-01

Effective Dose 1.91E+01 2.59E+01 3.32E+01 6.41E+01 9.53E+01

Radiation Dose Estimates (mSv/MBq) for 125I Iodide, 55% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.43E-03 9.65E-03 1.76E-02 3.12E-02 8.18E-02

Brain 5.14E-03 7.66E-03 1.55E-02 2.71E-02 5.59E-02

Esophagus 3.73E+00 4.89E+00 7.41E+00 1.43E+01 1.80E+01

Eyes 3.71E-03 4.84E-03 1.15E-02 1.84E-02 3.33E-02

Gallbladder Wall 5.40E-03 6.71E-03 1.24E-02 2.17E-02 6.34E-02

Left colon 1.04E-02 1.39E-02 2.35E-02 3.96E-02 7.06E-02

Small Intestine 4.84E-02 5.97E-02 9.73E-02 1.41E-01 2.02E-01

Stomach Wall 9.99E-02 1.25E-01 2.05E-01 2.96E-01 4.36E-01

Right colon 6.73E-03 1.09E-02 1.76E-02 2.90E-02 5.35E-02

Rectum 6.24E-03 8.27E-03 1.49E-02 2.47E-02 4.77E-02

Heart Wall 5.69E-02 8.45E-02 1.54E-01 2.45E-01 4.64E-01

Kidneys 6.80E-03 8.90E-03 1.37E-02 2.46E-02 4.71E-02

Liver 1.11E-02 1.71E-02 3.48E-02 6.31E-02 1.41E-01

Lungs 5.80E-01 7.43E-01 1.12E+00 1.48E+00 2.51E+00

Pancreas 2.01E-02 2.66E-02 4.73E-02 7.49E-02 1.54E-01

Prostate 5.63E-03 7.85E-03 2.10E-02 2.26E-02 4.51E-02

Salivary Glands 6.46E-02 1.03E-01 1.88E-01 3.34E-01 6.12E-01

Red Marrow 8.84E-02 1.02E-01 1.01E-01 1.11E-01 1.30E-01

Osteogenic Cells 2.54E-01 2.52E-01 2.73E-01 3.04E-01 3.12E-01

Spleen 1.10E-02 1.51E-02 2.94E-02 5.04E-02 1.08E-01

Testes 3.11E-03 4.06E-03 6.77E-03 1.10E-02 2.22E-02

Thymus 7.08E-01 1.61E+00 3.55E+00 7.73E+00 2.06E+01

Thyroid 5.07E+02 7.45E+02 9.51E+02 1.86E+03 2.73E+03

Urinary Bladder Wall 4.99E-02 6.14E-02 9.27E-02 1.39E-01 2.57E-01

Total Body 2.29E-01 2.72E-01 4.10E-01 5.96E-01 8.94E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.38E-02 1.57E-02 2.36E-02 3.97E-02 7.24E-02

Brain 7.74E-03 8.14E-03 1.82E-02 3.20E-02 5.86E-02

Breasts 3.35E-02 2.20E-02 ----- ----- -----

Esophagus 5.19E+00 5.65E+00 7.65E+00 8.78E+00 6.92E+00

Eyes 5.38E-03 6.98E-03 1.04E-02 2.88E-02 4.67E-02

Gallbladder Wall 7.06E-03 7.12E-03 1.20E-02 2.11E-02 4.72E-02

Left colon 8.97E-03 1.01E-02 1.85E-02 2.97E-02 6.38E-02

Small Intestine 5.83E-02 6.05E-02 9.66E-02 1.41E-01 2.02E-01

Stomach Wall 1.01E-01 1.13E-01 1.81E-01 2.61E-01 3.66E-01

Right colon 6.38E-03 6.90E-03 1.07E-02 1.81E-02 3.47E-02

Rectum 1.04E-02 1.40E-02 1.98E-02 3.06E-02 5.66E-02

Heart Wall 9.57E-02 9.81E-02 1.79E-01 3.11E-01 5.34E-01

Kidneys 8.31E-03 9.45E-03 1.41E-02 2.35E-02 4.26E-02

Liver 1.40E-02 1.42E-02 2.78E-02 5.38E-02 1.08E-01

Lungs 6.24E-01 5.53E-01 8.95E-01 1.34E+00 1.91E+00

Ovaries 6.42E-03 7.47E-03 1.25E-02 2.22E-02 4.97E-01

Pancreas 1.40E-02 1.66E-02 2.73E-02 4.61E-02 8.09E-02

Salivary Glands 1.15E-01 1.42E-01 2.25E-01 3.75E-01 7.03E-01

Red Marrow 1.93E-01 1.28E-01 1.22E-01 1.22E-01 1.29E-01

Osteogenic Cells 4.20E-01 2.69E-01 2.76E-01 3.02E-01 2.95E-01

Spleen 1.38E-02 1.55E-02 2.67E-02 4.35E-02 8.99E-02

Thymus 2.19E+00 3.23E+00 8.62E+00 1.54E+01 2.39E+01

Thyroid 5.90E+02 7.46E+02 9.55E+02 1.84E+03 2.76E+03

Urinary Bladder Wall 5.27E-02 5.46E-02 8.02E-02 1.22E-01 2.22E-01

Uterus 1.13E-02 1.49E-02 2.63E-02 4.19E-02 7.31E-02

Total Body 3.48E-01 2.90E-01 4.04E-01 5.87E-01 8.78E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.01E-02 1.27E-02 2.06E-02 3.55E-02 7.71E-02

Brain 6.44E-03 7.90E-03 1.68E-02 2.95E-02 5.72E-02

Breasts 3.35E-02 2.20E-02 ----- ----- -----

Esophagus 4.46E+00 5.27E+00 7.53E+00 1.15E+01 1.24E+01

Eyes 4.55E-03 5.91E-03 1.09E-02 2.36E-02 4.00E-02

Gallbladder Wall 6.23E-03 6.92E-03 1.22E-02 2.14E-02 5.53E-02

Left colon 9.68E-03 1.20E-02 2.10E-02 3.46E-02 6.72E-02

Small Intestine 5.33E-02 6.01E-02 9.69E-02 1.41E-01 2.02E-01

Stomach Wall 1.01E-01 1.19E-01 1.93E-01 2.79E-01 4.01E-01

Right colon 6.55E-03 8.90E-03 1.41E-02 2.36E-02 4.41E-02

Rectum 8.30E-03 1.11E-02 1.74E-02 2.76E-02 5.21E-02

Heart Wall 7.63E-02 9.13E-02 1.66E-01 2.78E-01 4.99E-01

Kidneys 7.56E-03 9.18E-03 1.39E-02 2.40E-02 4.49E-02

Liver 1.26E-02 1.56E-02 3.13E-02 5.85E-02 1.24E-01

Lungs 6.02E-01 6.48E-01 1.01E+00 1.41E+00 2.21E+00

Ovaries 6.42E-03 7.47E-03 1.25E-02 2.22E-02 4.97E-01

Pancreas 1.70E-02 2.16E-02 3.73E-02 6.05E-02 1.18E-01

Prostate 5.63E-03 7.85E-03 2.10E-02 2.26E-02 4.51E-02

Salivary Glands 8.97E-02 1.23E-01 2.07E-01 3.54E-01 6.58E-01

Red Marrow 1.41E-01 1.15E-01 1.12E-01 1.17E-01 1.30E-01

Osteogenic Cells 3.37E-01 2.60E-01 2.74E-01 3.03E-01 3.03E-01

Spleen 1.24E-02 1.53E-02 2.81E-02 4.70E-02 9.89E-02

Testes 3.11E-03 4.06E-03 6.77E-03 1.10E-02 2.22E-02

Thymus 1.45E+00 2.42E+00 6.09E+00 1.15E+01 2.23E+01

Thyroid 5.49E+02 7.45E+02 9.53E+02 1.85E+03 2.75E+03

Urinary Bladder Wall 5.13E-02 5.80E-02 8.64E-02 1.31E-01 2.40E-01

Uterus 1.13E-02 1.49E-02 2.63E-02 4.19E-02 7.31E-02

Total Body 2.88E-01 2.81E-01 4.07E-01 5.91E-01 8.86E-01

Effective Dose 2.33E+01 3.16E+01 4.06E+01 7.86E+01 1.17E+02

Radiation Dose Estimates (mSv/MBq) for 131I Iodide, Thyroid Blocked, 0% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.49E-02 4.44E-02 7.03E-02 1.14E-01 2.08E-01

Brain 2.67E-02 3.40E-02 5.78E-02 9.62E-02 1.75E-01

Esophagus 2.97E-02 3.83E-02 6.31E-02 1.05E-01 1.99E-01

Eyes 2.68E-02 3.40E-02 5.78E-02 9.85E-02 1.81E-01

Gallbladder Wall 3.38E-02 4.24E-02 6.93E-02 1.08E-01 1.86E-01

Left colon 3.45E-02 4.16E-02 6.87E-02 1.09E-01 1.97E-01

Small Intestine 3.75E-02 4.73E-02 7.64E-02 1.23E-01 2.21E-01

Stomach Wall 3.18E-02 3.99E-02 6.43E-02 1.04E-01 1.86E-01

Right colon 3.46E-02 4.34E-02 6.85E-02 1.12E-01 1.98E-01

Rectum 4.80E-02 5.98E-02 9.99E-02 1.54E-01 2.68E-01

Heart Wall 3.14E-02 4.02E-02 6.55E-02 1.04E-01 1.90E-01

Kidneys 6.57E-02 8.07E-02 1.11E-01 1.78E-01 2.83E-01

Liver 3.14E-02 4.01E-02 6.49E-02 1.05E-01 1.91E-01

Lungs 2.89E-02 3.75E-02 6.04E-02 9.82E-02 1.83E-01

Pancreas 3.38E-02 4.30E-02 6.89E-02 1.11E-01 2.02E-01

Prostate 5.44E-02 6.77E-02 1.62E-01 1.59E-01 2.65E-01

Salivary Glands 2.95E-02 3.80E-02 6.27E-02 1.05E-01 1.94E-01

Red Marrow 2.80E-02 3.51E-02 5.62E-02 9.27E-02 1.90E-01

Osteogenic Cells 2.46E-02 3.08E-02 4.57E-02 6.83E-02 1.27E-01

Spleen 3.17E-02 4.06E-02 6.56E-02 1.06E-01 1.94E-01

Testes 3.34E-02 4.26E-02 7.81E-02 1.08E-01 1.99E-01

Thymus 2.96E-02 3.80E-02 6.14E-02 9.96E-02 1.86E-01

Thyroid 2.96E-02 3.81E-02 6.28E-02 1.04E-01 1.98E-01

Urinary Bladder Wall 5.99E-01 7.65E-01 1.17E+00 1.82E+00 3.45E+00

Total Body 3.33E-02 4.19E-02 6.91E-02 1.12E-01 2.06E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 4.14E-02 4.44E-02 6.87E-02 1.10E-01 2.01E-01

Brain 3.28E-02 3.53E-02 5.78E-02 9.61E-02 1.75E-01

Breasts 3.11E-02 3.38E-02 ----- ----- -----

Esophagus 3.42E-02 3.96E-02 6.32E-02 1.04E-01 1.92E-01

Eyes 3.28E-02 3.53E-02 5.78E-02 9.62E-02 1.75E-01

Gallbladder Wall 4.12E-02 4.49E-02 7.10E-02 1.09E-01 1.85E-01

Left colon 4.32E-02 4.54E-02 7.34E-02 1.17E-01 2.10E-01

Small Intestine 4.34E-02 4.92E-02 7.65E-02 1.21E-01 2.15E-01

Stomach Wall 3.90E-02 4.13E-02 6.45E-02 1.04E-01 1.85E-01

Right colon 4.17E-02 4.40E-02 6.86E-02 1.12E-01 1.97E-01

Rectum 7.59E-02 9.21E-02 1.30E-01 1.89E-01 3.16E-01

Heart Wall 3.87E-02 4.14E-02 6.54E-02 1.03E-01 1.88E-01

Kidneys 7.44E-02 8.30E-02 1.11E-01 1.77E-01 2.80E-01

Liver 3.85E-02 4.14E-02 6.49E-02 1.04E-01 1.90E-01

Lungs 3.61E-02 3.87E-02 6.03E-02 9.66E-02 1.79E-01

Ovaries 5.57E-02 6.49E-02 9.13E-02 1.54E-01 2.78E-01

Pancreas 4.16E-02 4.47E-02 6.95E-02 1.11E-01 2.01E-01

Salivary Glands 3.40E-02 3.93E-02 6.28E-02 1.04E-01 1.91E-01

Red Marrow 3.33E-02 3.54E-02 4.87E-02 7.65E-02 1.53E-01

Osteogenic Cells 2.78E-02 3.06E-02 3.74E-02 4.74E-02 7.57E-02

Spleen 3.91E-02 4.21E-02 6.59E-02 1.06E-01 1.92E-01

Thymus 3.66E-02 3.92E-02 6.13E-02 9.88E-02 1.83E-01

Thyroid 3.40E-02 3.93E-02 6.27E-02 1.04E-01 1.91E-01

Urinary Bladder Wall 7.30E-01 7.37E-01 1.12E+00 1.75E+00 3.33E+00

Uterus 7.69E-02 9.50E-02 1.54E-01 2.23E-01 3.61E-01

Total Body 4.07E-02 4.33E-02 6.88E-02 1.11E-01 2.05E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.81E-02 4.44E-02 6.95E-02 1.12E-01 2.04E-01

Brain 2.98E-02 3.47E-02 5.78E-02 9.61E-02 1.75E-01

Breasts 3.11E-02 3.38E-02 ----- ----- -----

Esophagus 3.20E-02 3.89E-02 6.32E-02 1.05E-01 1.96E-01

Eyes 2.98E-02 3.47E-02 5.78E-02 9.73E-02 1.78E-01

Gallbladder Wall 3.75E-02 4.37E-02 7.02E-02 1.08E-01 1.86E-01

Left colon 3.89E-02 4.35E-02 7.10E-02 1.13E-01 2.03E-01

Small Intestine 4.04E-02 4.83E-02 7.64E-02 1.22E-01 2.18E-01

Stomach Wall 3.54E-02 4.06E-02 6.44E-02 1.04E-01 1.86E-01

Right colon 3.82E-02 4.37E-02 6.86E-02 1.12E-01 1.97E-01

Rectum 6.19E-02 7.59E-02 1.15E-01 1.72E-01 2.92E-01

Heart Wall 3.51E-02 4.08E-02 6.54E-02 1.03E-01 1.89E-01

Kidneys 7.01E-02 8.19E-02 1.11E-01 1.78E-01 2.82E-01

Liver 3.50E-02 4.08E-02 6.49E-02 1.05E-01 1.91E-01

Lungs 3.25E-02 3.81E-02 6.04E-02 9.74E-02 1.81E-01

Ovaries 5.57E-02 6.49E-02 9.13E-02 1.54E-01 2.78E-01

Pancreas 3.77E-02 4.39E-02 6.92E-02 1.11E-01 2.02E-01

Prostate 5.44E-02 6.77E-02 1.62E-01 1.59E-01 2.65E-01

Salivary Glands 3.18E-02 3.87E-02 6.27E-02 1.04E-01 1.93E-01

Red Marrow 3.07E-02 3.53E-02 5.25E-02 8.46E-02 1.72E-01

Osteogenic Cells 2.62E-02 3.07E-02 4.16E-02 5.79E-02 1.01E-01

Spleen 3.54E-02 4.13E-02 6.57E-02 1.06E-01 1.93E-01

Testes 3.34E-02 4.26E-02 7.81E-02 1.08E-01 1.99E-01

Thymus 3.31E-02 3.86E-02 6.14E-02 9.92E-02 1.84E-01

Thyroid 3.18E-02 3.87E-02 6.28E-02 1.04E-01 1.94E-01

Urinary Bladder Wall 6.65E-01 7.51E-01 1.14E+00 1.78E+00 3.39E+00

Uterus 7.69E-02 9.50E-02 1.54E-01 2.23E-01 3.61E-01

Total Body 3.70E-02 4.26E-02 6.90E-02 1.12E-01 2.05E-01

Effective Dose 5.81E-02 6.67E-02 1.75E-02 1.58E-01 2.94E-01

Radiation Dose Estimates (mSv/MBq) for 131I Iodide, 5% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 4.36E-02 5.55E-02 8.37E-02 1.30E-01 2.20E-01

Brain 2.67E-02 3.43E-02 5.67E-02 8.99E-02 1.56E-01

Esophagus 2.42E-01 3.12E-01 4.69E-01 8.08E-01 1.17E+00

Eyes 2.50E-02 3.39E-02 5.56E-02 8.90E-02 1.61E-01

Gallbladder Wall 3.54E-02 4.43E-02 6.89E-02 1.08E-01 1.84E-01

Left colon 5.17E-02 6.39E-02 9.44E-02 1.42E-01 2.38E-01

Small Intestine 3.33E-01 4.12E-01 6.87E-01 9.70E-01 1.28E+00

Stomach Wall 4.86E-01 6.03E-01 9.91E-01 1.39E+00 1.78E+00

Right colon 3.40E-02 4.69E-02 6.99E-02 1.10E-01 1.87E-01

Rectum 4.54E-02 5.67E-02 9.30E-02 1.41E-01 2.39E-01

Heart Wall 5.56E-02 7.11E-02 1.08E-01 1.55E-01 2.62E-01

Kidneys 6.40E-02 7.92E-02 1.11E-01 1.75E-01 2.76E-01

Liver 3.61E-02 4.63E-02 7.23E-02 1.12E-01 1.94E-01

Lungs 7.46E-02 9.33E-02 1.37E-01 1.92E-01 3.19E-01

Pancreas 7.65E-02 9.28E-02 1.41E-01 2.08E-01 3.39E-01

Prostate 4.81E-02 6.23E-02 1.51E-01 1.45E-01 2.34E-01

Salivary Glands 4.90E-02 6.37E-02 9.98E-02 1.49E-01 2.54E-01

Red Marrow 4.63E-02 5.29E-02 6.64E-02 8.95E-02 1.57E-01

Osteogenic Cells 3.68E-02 3.99E-02 5.10E-02 6.85E-02 1.07E-01

Spleen 4.48E-02 5.75E-02 8.91E-02 1.35E-01 2.33E-01

Testes 2.53E-02 3.27E-02 6.18E-02 8.27E-02 1.51E-01

Thymus 1.14E-01 1.77E-01 2.85E-01 5.67E-01 1.80E+00

Thyroid 6.95E+01 1.13E+02 1.64E+02 3.60E+02 6.24E+02

Urinary Bladder Wall 5.64E-01 7.23E-01 1.10E+00 1.71E+00 3.26E+00

Total Body 6.04E-02 7.60E-02 1.25E-01 1.99E-01 3.52E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.57E-02 7.41E-02 9.37E-02 1.38E-01 2.37E-01

Brain 3.33E-02 5.73E-02 5.79E-02 9.16E-02 1.56E-01

Breasts 4.03E-02 8.76E-02 ----- ----- -----

Esophagus 2.85E-01 8.77E-01 4.46E-01 5.48E-01 5.76E-01

Eyes 3.35E-02 6.51E-02 5.98E-02 9.89E-02 1.71E-01

Gallbladder Wall 4.67E-02 5.57E-02 7.66E-02 1.15E-01 1.95E-01

Left colon 5.30E-02 5.96E-02 9.13E-02 1.40E-01 2.36E-01

Small Intestine 4.09E-01 4.18E-01 6.87E-01 9.70E-01 1.28E+00

Stomach Wall 5.33E-01 6.17E-01 9.90E-01 1.39E+00 1.78E+00

Right colon 4.30E-02 4.95E-02 6.60E-02 1.04E-01 1.76E-01

Rectum 6.74E-02 7.92E-02 1.17E-01 1.67E-01 2.76E-01

Heart Wall 6.51E-02 1.32E-01 1.02E-01 1.51E-01 2.50E-01

Kidneys 7.47E-02 8.21E-02 1.13E-01 1.78E-01 2.79E-01

Liver 4.23E-02 6.09E-02 6.91E-02 1.07E-01 1.90E-01

Lungs 8.57E-02 1.99E-01 1.27E-01 1.84E-01 2.91E-01

Ovaries 5.24E-02 6.02E-02 8.61E-02 1.43E-01 3.23E-01

Pancreas 6.86E-02 8.36E-02 1.13E-01 1.71E-01 2.65E-01

Salivary Glands 6.43E-02 1.59E-01 1.04E-01 1.53E-01 2.56E-01

Red Marrow 5.94E-02 9.41E-02 5.76E-02 7.55E-02 1.28E-01

Osteogenic Cells 4.37E-02 6.55E-02 4.32E-02 5.10E-02 7.03E-02

Spleen 6.17E-02 7.57E-02 1.00E-01 1.50E-01 2.48E-01

Thymus 2.26E-01 7.58E-01 5.30E-01 9.58E-01 1.77E+00

Thyroid 8.15E+01 3.39E+02 1.64E+02 3.59E+02 6.29E+02

Urinary Bladder Wall 6.89E-01 6.28E-01 1.05E+00 1.65E+00 3.13E+00

Uterus 7.53E-02 8.94E-02 1.50E-01 2.15E-01 3.40E-01

Total Body 7.86E-02 1.56E-01 1.25E-01 1.97E-01 3.50E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 4.97E-02 5.87E-02 7.12E-02 1.34E-01 2.29E-01

Brain 3.00E-02 3.50E-02 5.74E-02 9.08E-02 1.56E-01

Breasts 4.03E-02 4.68E-02 ----- ----- -----

Esophagus 2.63E-01 3.14E-01 4.58E-01 6.78E-01 8.73E-01

Eyes 2.93E-02 3.62E-02 5.78E-02 9.39E-02 1.66E-01

Gallbladder Wall 4.11E-02 4.74E-02 6.19E-02 1.12E-01 1.90E-01

Left colon 5.23E-02 6.06E-02 7.58E-02 1.41E-01 2.37E-01

Small Intestine 3.71E-01 4.14E-01 3.73E-01 9.70E-01 1.28E+00

Stomach Wall 5.10E-01 6.04E-01 5.23E-01 1.39E+00 1.78E+00

Right colon 3.85E-02 4.65E-02 6.04E-02 1.07E-01 1.82E-01

Rectum 5.64E-02 7.02E-02 1.01E-01 1.54E-01 2.58E-01

Heart Wall 6.04E-02 7.01E-02 9.98E-02 1.53E-01 2.56E-01

Kidneys 6.93E-02 8.10E-02 1.03E-01 1.77E-01 2.77E-01

Liver 3.92E-02 4.58E-02 6.52E-02 1.10E-01 1.92E-01

Lungs 8.02E-02 9.09E-02 1.29E-01 1.88E-01 3.05E-01

Ovaries 5.24E-02 6.14E-02 7.14E-02 1.43E-01 3.23E-01

Pancreas 7.25E-02 8.43E-02 9.87E-02 1.89E-01 3.02E-01

Prostate 4.81E-02 6.23E-02 1.51E-01 1.45E-01 2.34E-01

Salivary Glands 5.67E-02 6.76E-02 1.03E-01 1.51E-01 2.55E-01

Red Marrow 5.29E-02 5.18E-02 6.07E-02 8.25E-02 1.43E-01

Osteogenic Cells 4.02E-02 3.92E-02 4.61E-02 5.97E-02 8.88E-02

Spleen 5.32E-02 6.25E-02 7.17E-02 1.42E-01 2.41E-01

Testes 2.53E-02 3.27E-02 6.18E-02 8.27E-02 1.51E-01

Thymus 1.70E-01 2.25E-01 4.14E-01 7.62E-01 1.78E+00

Thyroid 7.55E+01 1.13E+02 1.67E+02 3.60E+02 6.26E+02

Urinary Bladder Wall 6.27E-01 7.09E-01 1.08E+00 1.68E+00 3.19E+00

Uterus 7.53E-02 9.32E-02 1.31E-01 2.15E-01 3.40E-01

Total Body 6.95E-02 7.81E-02 1.18E-01 1.98E-01 3.51E-01

Effective Dose 3.31E+00 4.89E+00 7.18E+00 1.55E+01 2.68E+01

Radiation Dose Estimates (mSv/MBq) for 131I Iodide, 15% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.24E-02 6.55E-02 9.86E-02 1.54E-01 2.56E-01

Brain 4.21E-02 5.44E-02 8.79E-02 1.33E-01 2.17E-01

Esophagus 6.61E-01 8.51E-01 1.27E+00 2.21E+00 3.15E+00

Eyes 3.71E-02 5.34E-02 8.44E-02 1.26E-01 2.26E-01

Gallbladder Wall 4.27E-02 5.34E-02 8.24E-02 1.30E-01 2.20E-01

Left colon 5.60E-02 7.32E-02 1.07E-01 1.63E-01 2.70E-01

Small Intestine 3.35E-01 4.15E-01 6.92E-01 9.78E-01 1.30E+00

Stomach Wall 5.02E-01 6.23E-01 1.02E+00 1.43E+00 1.85E+00

Right colon 3.52E-02 4.95E-02 7.50E-02 1.20E-01 2.07E-01

Rectum 4.43E-02 5.53E-02 9.13E-02 1.38E-01 2.36E-01

Heart Wall 9.70E-02 1.24E-01 1.84E-01 2.54E-01 4.16E-01

Kidneys 6.41E-02 7.98E-02 1.14E-01 1.78E-01 2.83E-01

Liver 4.96E-02 6.37E-02 9.80E-02 1.50E-01 2.52E-01

Lungs 1.70E-01 2.10E-01 3.00E-01 4.04E-01 6.49E-01

Pancreas 8.58E-02 1.05E-01 1.61E-01 2.36E-01 3.91E-01

Prostate 4.64E-02 6.05E-02 1.43E-01 1.43E-01 2.33E-01

Salivary Glands 1.05E-01 1.37E-01 2.10E-01 2.96E-01 4.83E-01

Red Marrow 9.07E-02 9.92E-02 1.11E-01 1.29E-01 1.95E-01

Osteogenic Cells 6.84E-02 6.97E-02 8.18E-02 1.03E-01 1.37E-01

Spleen 5.51E-02 6.99E-02 1.09E-01 1.63E-01 2.77E-01

Testes 2.50E-02 3.24E-02 6.05E-02 8.27E-02 1.52E-01

Thymus 2.96E-01 4.71E-01 7.60E-01 1.54E+00 5.13E+00

Thyroid 2.10E+02 3.39E+02 4.93E+02 1.08E+03 1.88E+03

Urinary Bladder Wall 5.10E-01 6.53E-01 9.99E-01 1.55E+00 2.95E+00

Total Body 1.17E-01 1.46E-01 2.41E-01 3.77E-01 6.59E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.42E-02 7.41E-02 1.11E-01 1.61E-01 2.73E-01

Brain 5.33E-02 5.73E-02 9.16E-02 1.38E-01 2.19E-01

Breasts 7.27E-02 8.76E-02 ----- ----- -----

Esophagus 7.95E-01 8.77E-01 1.23E+00 1.46E+00 1.41E+00

Eyes 5.40E-02 6.51E-02 9.71E-02 1.60E-01 2.64E-01

Gallbladder Wall 5.16E-02 5.57E-02 8.39E-02 1.26E-01 2.15E-01

Left colon 5.48E-02 5.96E-02 9.73E-02 1.51E-01 2.51E-01

Small Intestine 4.11E-01 4.18E-01 6.90E-01 9.76E-01 1.29E+00

Stomach Wall 5.45E-01 6.17E-01 1.01E+00 1.42E+00 1.82E+00

Right colon 4.58E-02 4.95E-02 6.87E-02 1.09E-01 1.85E-01

Rectum 6.41E-02 7.92E-02 1.11E-01 1.61E-01 2.67E-01

Heart Wall 1.25E-01 1.32E-01 1.91E-01 2.72E-01 4.28E-01

Kidneys 7.50E-02 8.21E-02 1.14E-01 1.81E-01 2.82E-01

Liver 5.75E-02 6.09E-02 9.21E-02 1.40E-01 2.42E-01

Lungs 1.95E-01 1.99E-01 2.78E-01 3.93E-01 5.83E-01

Ovaries 5.13E-02 6.02E-02 8.58E-02 1.44E-01 4.68E-01

Pancreas 7.60E-02 8.36E-02 1.25E-01 1.91E-01 2.95E-01

Salivary Glands 1.45E-01 1.59E-01 2.22E-01 3.11E-01 4.96E-01

Red Marrow 1.21E-01 9.41E-02 9.64E-02 1.11E-01 1.62E-01

Osteogenic Cells 8.42E-02 6.55E-02 7.14E-02 8.11E-02 9.96E-02

Spleen 6.94E-02 7.57E-02 1.14E-01 1.69E-01 2.83E-01

Thymus 6.24E-01 7.58E-01 1.50E+00 2.73E+00 5.06E+00

Thyroid 2.46E+02 3.39E+02 4.93E+02 1.08E+03 1.90E+03

Urinary Bladder Wall 6.22E-01 6.28E-01 9.51E-01 1.49E+00 2.83E+00

Uterus 7.23E-02 8.94E-02 1.44E-01 2.09E-01 3.34E-01

Total Body 1.54E-01 1.56E-01 2.40E-01 3.74E-01 6.52E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.83E-02 6.98E-02 1.05E-01 1.57E-01 2.64E-01

Brain 4.77E-02 5.58E-02 8.97E-02 1.35E-01 2.18E-01

Breasts 7.27E-02 8.76E-02 ----- ----- -----

Esophagus 7.28E-01 8.64E-01 1.25E+00 1.84E+00 2.28E+00

Eyes 4.55E-02 5.92E-02 9.08E-02 1.43E-01 2.45E-01

Gallbladder Wall 4.72E-02 5.46E-02 8.31E-02 1.28E-01 2.18E-01

Left colon 5.54E-02 6.64E-02 1.02E-01 1.57E-01 2.60E-01

Small Intestine 3.73E-01 4.16E-01 6.91E-01 9.77E-01 1.29E+00

Stomach Wall 5.24E-01 6.20E-01 1.02E+00 1.43E+00 1.83E+00

Right colon 4.05E-02 4.95E-02 7.18E-02 1.14E-01 1.96E-01

Rectum 5.42E-02 6.73E-02 1.01E-01 1.50E-01 2.52E-01

Heart Wall 1.11E-01 1.28E-01 1.88E-01 2.63E-01 4.22E-01

Kidneys 6.95E-02 8.10E-02 1.14E-01 1.79E-01 2.83E-01

Liver 5.35E-02 6.23E-02 9.50E-02 1.45E-01 2.47E-01

Lungs 1.82E-01 2.04E-01 2.89E-01 3.98E-01 6.16E-01

Ovaries 5.13E-02 6.02E-02 8.58E-02 1.44E-01 4.68E-01

Pancreas 8.09E-02 9.42E-02 1.43E-01 2.14E-01 3.43E-01

Prostate 4.64E-02 6.05E-02 1.43E-01 1.43E-01 2.33E-01

Salivary Glands 1.25E-01 1.48E-01 2.16E-01 3.03E-01 4.90E-01

Red Marrow 1.06E-01 9.67E-02 1.04E-01 1.20E-01 1.79E-01

Osteogenic Cells 7.63E-02 6.76E-02 7.66E-02 9.19E-02 1.18E-01

Spleen 6.22E-02 7.28E-02 1.11E-01 1.66E-01 2.80E-01

Testes 2.50E-02 3.24E-02 6.05E-02 8.27E-02 1.52E-01

Thymus 4.60E-01 6.14E-01 1.13E+00 2.14E+00 5.09E+00

Thyroid 2.28E+02 3.39E+02 4.93E+02 1.08E+03 1.89E+03

Urinary Bladder Wall 5.66E-01 6.40E-01 9.75E-01 1.52E+00 2.89E+00

Uterus 7.23E-02 8.94E-02 1.44E-01 2.09E-01 3.34E-01

Total Body 1.35E-01 1.51E-01 2.40E-01 3.76E-01 6.55E-01

Effective Dose 9.74E+00 1.44E+01 2.10E+01 4.59E+01 8.00E+01

Radiation Dose Estimates (mSv/MBq) for 131I Iodide, 25% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.13E-02 7.55E-02 1.14E-01 1.77E-01 2.92E-01

Brain 5.73E-02 7.43E-02 1.19E-01 1.76E-01 2.78E-01

Esophagus 1.08E+00 1.38E+00 2.07E+00 3.62E+00 5.11E+00

Eyes 4.90E-02 7.26E-02 1.13E-01 1.64E-01 2.91E-01

Gallbladder Wall 4.99E-02 6.25E-02 9.58E-02 1.52E-01 2.56E-01

Left colon 6.03E-02 8.25E-02 1.20E-01 1.85E-01 3.01E-01

Small Intestine 3.37E-01 4.18E-01 6.97E-01 9.86E-01 1.31E+00

Stomach Wall 5.18E-01 6.43E-01 1.05E+00 1.48E+00 1.91E+00

Right colon 3.64E-02 5.20E-02 8.01E-02 1.30E-01 2.26E-01

Rectum 4.31E-02 5.38E-02 8.94E-02 1.36E-01 2.33E-01

Heart Wall 1.38E-01 1.76E-01 2.61E-01 3.53E-01 5.69E-01

Kidneys 6.61E-02 8.28E-02 1.20E-01 1.86E-01 2.99E-01

Liver 6.29E-02 8.09E-02 1.24E-01 1.88E-01 3.10E-01

Lungs 2.64E-01 3.26E-01 4.63E-01 6.15E-01 9.77E-01

Pancreas 9.51E-02 1.17E-01 1.82E-01 2.65E-01 4.43E-01

Prostate 4.45E-02 5.86E-02 1.34E-01 1.40E-01 2.32E-01

Salivary Glands 1.61E-01 2.09E-01 3.19E-01 4.43E-01 7.12E-01

Red Marrow 1.35E-01 1.45E-01 1.55E-01 1.69E-01 2.32E-01

Osteogenic Cells 9.99E-02 9.92E-02 1.13E-01 1.37E-01 1.66E-01

Spleen 6.53E-02 8.23E-02 1.29E-01 1.90E-01 3.20E-01

Testes 2.47E-02 3.20E-02 5.92E-02 8.26E-02 1.52E-01

Thymus 4.76E-01 7.62E-01 1.23E+00 2.52E+00 8.44E+00

Thyroid 3.48E+02 5.63E+02 8.20E+02 1.81E+03 3.14E+03

Urinary Bladder Wall 4.52E-01 5.79E-01 8.87E-01 1.38E+00 2.62E+00

Total Body 1.73E-01 2.16E-01 3.56E-01 5.56E-01 9.63E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.26E-02 8.65E-02 1.29E-01 1.85E-01 3.08E-01

Brain 7.32E-02 7.86E-02 1.25E-01 1.85E-01 2.82E-01

Breasts 1.05E-01 1.28E-01 ----- ----- -----

Esophagus 1.30E+00 1.43E+00 2.01E+00 2.38E+00 2.23E+00

Eyes 7.43E-02 9.15E-02 1.34E-01 2.21E-01 3.56E-01

Gallbladder Wall 5.66E-02 6.09E-02 9.13E-02 1.36E-01 2.34E-01

Left colon 5.65E-02 6.20E-02 1.03E-01 1.62E-01 2.66E-01

Small Intestine 4.13E-01 4.20E-01 6.94E-01 9.81E-01 1.30E+00

Stomach Wall 5.57E-01 6.29E-01 1.03E+00 1.44E+00 1.86E+00

Right colon 4.86E-02 5.29E-02 7.14E-02 1.14E-01 1.93E-01

Rectum 6.05E-02 7.44E-02 1.06E-01 1.54E-01 2.57E-01

Heart Wall 1.84E-01 1.94E-01 2.78E-01 3.94E-01 6.06E-01

Kidneys 7.75E-02 8.40E-02 1.19E-01 1.89E-01 2.94E-01

Liver 7.26E-02 7.64E-02 1.15E-01 1.72E-01 2.93E-01

Lungs 3.04E-01 3.08E-01 4.29E-01 6.02E-01 8.75E-01

Ovaries 5.01E-02 5.89E-02 8.54E-02 1.43E-01 6.11E-01

Pancreas 8.33E-02 9.14E-02 1.38E-01 2.11E-01 3.25E-01

Salivary Glands 2.25E-01 2.45E-01 3.40E-01 4.69E-01 7.34E-01

Red Marrow 1.82E-01 1.37E-01 1.35E-01 1.47E-01 1.96E-01

Osteogenic Cells 1.24E-01 9.23E-02 9.95E-02 1.11E-01 1.29E-01

Spleen 7.71E-02 8.38E-02 1.27E-01 1.89E-01 3.18E-01

Thymus 1.02E+00 1.24E+00 2.47E+00 4.50E+00 8.33E+00

Thyroid 4.09E+02 5.63E+02 8.21E+02 1.80E+03 3.16E+03

Urinary Bladder Wall 5.51E-01 5.57E-01 8.43E-01 1.32E+00 2.51E+00

Uterus 6.91E-02 8.54E-02 1.38E-01 2.02E-01 3.26E-01

Total Body 2.28E-01 2.31E-01 3.54E-01 5.51E-01 9.52E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 6.70E-02 8.10E-02 1.21E-01 1.81E-01 3.00E-01

Brain 6.52E-02 7.64E-02 1.22E-01 1.80E-01 2.80E-01

Breasts 1.05E-01 1.28E-01 ----- ----- -----

Esophagus 1.19E+00 1.41E+00 2.04E+00 3.00E+00 3.67E+00

Eyes 6.17E-02 8.20E-02 1.24E-01 1.92E-01 3.23E-01

Gallbladder Wall 5.33E-02 6.17E-02 9.35E-02 1.44E-01 2.45E-01

Left colon 5.84E-02 7.22E-02 1.12E-01 1.73E-01 2.84E-01

Small Intestine 3.75E-01 4.19E-01 6.95E-01 9.84E-01 1.31E+00

Stomach Wall 5.37E-01 6.36E-01 1.04E+00 1.46E+00 1.88E+00

Right colon 4.25E-02 5.24E-02 7.57E-02 1.22E-01 2.09E-01

Rectum 5.18E-02 6.41E-02 9.75E-02 1.45E-01 2.45E-01

Heart Wall 1.61E-01 1.85E-01 2.69E-01 3.73E-01 5.87E-01

Kidneys 7.18E-02 8.34E-02 1.19E-01 1.87E-01 2.96E-01

Liver 6.78E-02 7.87E-02 1.19E-01 1.80E-01 3.02E-01

Lungs 2.84E-01 3.17E-01 4.46E-01 6.09E-01 9.26E-01

Ovaries 5.01E-02 5.89E-02 8.54E-02 1.43E-01 6.11E-01

Pancreas 8.92E-02 1.04E-01 1.60E-01 2.38E-01 3.84E-01

Prostate 4.45E-02 5.86E-02 1.34E-01 1.40E-01 2.32E-01

Salivary Glands 1.93E-01 2.27E-01 3.30E-01 4.56E-01 7.23E-01

Red Marrow 1.58E-01 1.41E-01 1.45E-01 1.58E-01 2.14E-01

Osteogenic Cells 1.12E-01 9.58E-02 1.06E-01 1.24E-01 1.47E-01

Spleen 7.12E-02 8.30E-02 1.28E-01 1.89E-01 3.19E-01

Testes 2.47E-02 3.20E-02 5.92E-02 8.26E-02 1.52E-01

Thymus 7.48E-01 1.00E+00 1.85E+00 3.51E+00 8.39E+00

Thyroid 3.79E+02 5.63E+02 8.20E+02 1.80E+03 3.15E+03

Urinary Bladder Wall 5.02E-01 5.68E-01 8.65E-01 1.35E+00 2.56E+00

Uterus 6.91E-02 8.54E-02 1.38E-01 2.02E-01 3.26E-01

Total Body 2.00E-01 2.23E-01 3.55E-01 5.53E-01 9.58E-01

Effective Dose 1.61E+01 2.39E+01 3.48E+01 7.63E+01 1.33E+02

Radiation Dose Estimates (mSv/MBq) for 131I Iodide, 35% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.04E-02 8.57E-02 1.29E-01 2.01E-01 3.29E-01

Brain 7.26E-02 9.43E-02 1.50E-01 2.18E-01 3.38E-01

Esophagus 1.49E+00 1.92E+00 2.87E+00 5.03E+00 7.06E+00

Eyes 6.10E-02 9.19E-02 1.42E-01 2.01E-01 3.55E-01

Gallbladder Wall 5.72E-02 7.17E-02 1.09E-01 1.74E-01 2.92E-01

Left colon 6.47E-02 9.18E-02 1.33E-01 2.06E-01 3.33E-01

Small Intestine 3.39E-01 4.21E-01 7.02E-01 9.94E-01 1.32E+00

Stomach Wall 5.34E-01 6.63E-01 1.08E+00 1.52E+00 1.97E+00

Right colon 3.77E-02 5.46E-02 8.52E-02 1.40E-01 2.45E-01

Rectum 4.19E-02 5.23E-02 8.75E-02 1.33E-01 2.30E-01

Heart Wall 1.79E-01 2.29E-01 3.37E-01 4.52E-01 7.21E-01

Kidneys 7.03E-02 8.85E-02 1.30E-01 2.00E-01 3.23E-01

Liver 7.63E-02 9.82E-02 1.49E-01 2.25E-01 3.67E-01

Lungs 3.58E-01 4.42E-01 6.25E-01 8.27E-01 1.30E+00

Pancreas 1.04E-01 1.28E-01 2.02E-01 2.93E-01 4.94E-01

Prostate 4.27E-02 5.67E-02 1.26E-01 1.38E-01 2.31E-01

Salivary Glands 2.17E-01 2.82E-01 4.28E-01 5.90E-01 9.39E-01

Red Marrow 1.79E-01 1.91E-01 1.99E-01 2.09E-01 2.70E-01

Osteogenic Cells 1.31E-01 1.29E-01 1.43E-01 1.71E-01 1.95E-01

Spleen 7.56E-02 9.48E-02 1.48E-01 2.18E-01 3.63E-01

Testes 2.43E-02 3.17E-02 5.78E-02 8.24E-02 1.52E-01

Thymus 6.57E-01 1.06E+00 1.71E+00 3.50E+00 1.17E+01

Thyroid 4.88E+02 7.88E+02 1.15E+03 2.53E+03 4.38E+03

Urinary Bladder Wall 3.94E-01 5.06E-01 7.75E-01 1.21E+00 2.29E+00

Total Body 2.29E-01 2.86E-01 4.71E-01 7.35E-01 1.27E+00

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.13E-02 9.90E-02 1.47E-01 2.08E-01 3.44E-01

Brain 9.31E-02 1.00E-01 1.59E-01 2.31E-01 3.45E-01

Breasts 1.37E-01 1.69E-01 ----- ----- -----

Esophagus 1.81E+00 1.99E+00 2.79E+00 3.30E+00 3.05E+00

Eyes 9.47E-02 1.18E-01 1.71E-01 2.81E-01 4.48E-01

Gallbladder Wall 6.16E-02 6.63E-02 9.87E-02 1.47E-01 2.54E-01

Left colon 5.84E-02 6.44E-02 1.09E-01 1.72E-01 2.81E-01

Small Intestine 4.14E-01 4.22E-01 6.97E-01 9.87E-01 1.31E+00

Stomach Wall 5.68E-01 6.41E-01 1.04E+00 1.47E+00 1.90E+00

Right colon 5.15E-02 5.63E-02 7.42E-02 1.19E-01 2.01E-01

Rectum 5.70E-02 6.96E-02 9.98E-02 1.47E-01 2.47E-01

Heart Wall 2.44E-01 2.56E-01 3.66E-01 5.15E-01 7.82E-01

Kidneys 8.24E-02 8.84E-02 1.27E-01 2.02E-01 3.14E-01

Liver 8.78E-02 9.20E-02 1.38E-01 2.05E-01 3.45E-01

Lungs 4.14E-01 4.18E-01 5.81E-01 8.11E-01 1.16E+00

Ovaries 4.89E-02 5.76E-02 8.50E-02 1.43E-01 7.54E-01

Pancreas 9.07E-02 9.92E-02 1.51E-01 2.32E-01 3.54E-01

Salivary Glands 3.05E-01 3.32E-01 4.58E-01 6.27E-01 9.71E-01

Red Marrow 2.43E-01 1.80E-01 1.74E-01 1.83E-01 2.30E-01

Osteogenic Cells 1.65E-01 1.19E-01 1.28E-01 1.41E-01 1.58E-01

Spleen 8.49E-02 9.20E-02 1.41E-01 2.08E-01 3.53E-01

Thymus 1.42E+00 1.72E+00 3.43E+00 6.28E+00 1.16E+01

Thyroid 5.72E+02 7.89E+02 1.15E+03 2.52E+03 4.41E+03

Urinary Bladder Wall 4.80E-01 4.85E-01 7.36E-01 1.15E+00 2.19E+00

Uterus 6.59E-02 8.13E-02 1.31E-01 1.95E-01 3.18E-01

Total Body 3.03E-01 3.06E-01 4.68E-01 7.27E-01 1.25E+00

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.58E-02 9.24E-02 1.38E-01 2.05E-01 3.36E-01

Brain 8.29E-02 9.71E-02 1.54E-01 2.25E-01 3.41E-01

Breasts 1.37E-01 1.69E-01 0.00E+00 0.00E+00 0.00E+00

Esophagus 1.65E+00 1.96E+00 2.83E+00 4.16E+00 5.06E+00

Eyes 7.79E-02 1.05E-01 1.57E-01 2.41E-01 4.01E-01

Gallbladder Wall 5.94E-02 6.90E-02 1.04E-01 1.61E-01 2.73E-01

Left colon 6.15E-02 7.81E-02 1.21E-01 1.89E-01 3.07E-01

Small Intestine 3.77E-01 4.21E-01 7.00E-01 9.90E-01 1.32E+00

Stomach Wall 5.51E-01 6.52E-01 1.06E+00 1.49E+00 1.94E+00

Right colon 4.46E-02 5.54E-02 7.97E-02 1.29E-01 2.23E-01

Rectum 4.95E-02 6.09E-02 9.37E-02 1.40E-01 2.38E-01

Heart Wall 2.12E-01 2.42E-01 3.51E-01 4.84E-01 7.51E-01

Kidneys 7.63E-02 8.84E-02 1.28E-01 2.01E-01 3.18E-01

Liver 8.21E-02 9.51E-02 1.44E-01 2.15E-01 3.56E-01

Lungs 3.86E-01 4.30E-01 6.03E-01 8.19E-01 1.23E+00

Ovaries 4.89E-02 5.76E-02 8.50E-02 1.43E-01 7.54E-01

Pancreas 9.76E-02 1.14E-01 1.76E-01 2.63E-01 4.24E-01

Prostate 4.27E-02 5.67E-02 1.26E-01 1.38E-01 2.31E-01

Salivary Glands 2.61E-01 3.07E-01 4.43E-01 6.09E-01 9.55E-01

Red Marrow 2.11E-01 1.86E-01 1.86E-01 1.96E-01 2.50E-01

Osteogenic Cells 1.48E-01 1.24E-01 1.35E-01 1.56E-01 1.76E-01

Spleen 8.02E-02 9.34E-02 1.45E-01 2.13E-01 3.58E-01

Testes 2.43E-02 3.17E-02 5.78E-02 8.24E-02 1.52E-01

Thymus 1.04E+00 1.39E+00 2.57E+00 4.89E+00 1.16E+01

Thyroid 5.30E+02 7.88E+02 1.15E+03 2.53E+03 4.40E+03

Urinary Bladder Wall 4.37E-01 4.96E-01 7.55E-01 1.18E+00 2.24E+00

Uterus 6.59E-02 8.13E-02 1.31E-01 1.95E-01 3.18E-01

Total Body 2.66E-01 2.96E-01 4.70E-01 7.31E-01 1.26E+00

Effective Dose 2.25E+01 3.34E+01 4.86E+01 1.07E+02 1.85E+02

Radiation Dose Estimates (mSv/MBq) for 131I Iodide, 45% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.89E-02 9.53E-02 1.44E-01 2.24E-01 3.64E-01

Brain 8.78E-02 1.14E-01 1.82E-01 2.61E-01 3.99E-01

Esophagus 1.90E+00 2.45E+00 3.68E+00 6.41E+00 9.05E+00

Eyes 7.29E-02 1.11E-01 1.71E-01 2.38E-01 4.20E-01

Gallbladder Wall 6.43E-02 8.07E-02 1.23E-01 1.96E-01 3.28E-01

Left colon 6.89E-02 1.01E-01 1.46E-01 2.26E-01 3.65E-01

Small Intestine 3.42E-01 4.24E-01 7.08E-01 1.00E+00 1.34E+00

Stomach Wall 5.49E-01 6.83E-01 1.11E+00 1.56E+00 2.04E+00

Right colon 3.89E-02 5.71E-02 9.03E-02 1.50E-01 2.64E-01

Rectum 4.08E-02 5.08E-02 8.58E-02 1.31E-01 2.28E-01

Heart Wall 2.20E-01 2.81E-01 4.14E-01 5.50E-01 8.76E-01

Kidneys 6.74E-02 8.55E-02 1.28E-01 1.95E-01 3.18E-01

Liver 8.95E-02 1.15E-01 1.75E-01 2.62E-01 4.25E-01

Lungs 4.51E-01 5.58E-01 7.91E-01 1.04E+00 1.63E+00

Pancreas 1.14E-01 1.40E-01 2.23E-01 3.21E-01 5.45E-01

Prostate 4.10E-02 5.49E-02 1.18E-01 1.36E-01 2.31E-01

Salivary Glands 2.72E-01 3.54E-01 5.39E-01 7.35E-01 1.17E+00

Red Marrow 2.23E-01 2.37E-01 2.44E-01 2.48E-01 3.07E-01

Osteogenic Cells 1.63E-01 1.58E-01 1.74E-01 2.05E-01 2.24E-01

Spleen 8.56E-02 1.07E-01 1.68E-01 2.45E-01 4.07E-01

Testes 2.40E-02 3.14E-02 5.65E-02 8.23E-02 1.53E-01

Thymus 8.36E-01 1.35E+00 2.19E+00 4.46E+00 1.51E+01

Thyroid 6.26E+02 1.01E+03 1.48E+03 3.25E+03 5.65E+03

Urinary Bladder Wall 3.40E-01 4.36E-01 6.70E-01 1.04E+00 1.98E+00

Total Body 2.84E-01 3.56E-01 5.88E-01 9.11E-01 1.57E+00

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.95E-02 1.11E-01 1.64E-01 2.30E-01 3.79E-01

Brain 1.13E-01 1.21E-01 1.93E-01 2.77E-01 4.08E-01

Breasts 1.69E-01 2.09E-01 ----- ----- -----

Esophagus 2.31E+00 2.55E+00 3.58E+00 4.20E+00 3.89E+00

Eyes 1.15E-01 1.44E-01 2.09E-01 3.41E-01 5.41E-01

Gallbladder Wall 6.64E-02 7.14E-02 1.06E-01 1.57E-01 2.73E-01

Left colon 6.01E-02 6.68E-02 1.15E-01 1.82E-01 2.96E-01

Small Intestine 4.16E-01 4.24E-01 7.00E-01 9.93E-01 1.32E+00

Stomach Wall 5.80E-01 6.53E-01 1.06E+00 1.50E+00 1.94E+00

Right colon 5.42E-02 5.96E-02 7.69E-02 1.24E-01 2.08E-01

Rectum 5.37E-02 6.51E-02 9.44E-02 1.40E-01 2.37E-01

Heart Wall 3.03E-01 3.18E-01 4.56E-01 6.34E-01 9.61E-01

Kidneys 7.94E-02 8.40E-02 1.23E-01 1.97E-01 3.05E-01

Liver 1.03E-01 1.07E-01 1.61E-01 2.37E-01 3.97E-01

Lungs 5.21E-01 5.27E-01 7.34E-01 1.02E+00 1.46E+00

Ovaries 4.77E-02 5.64E-02 8.47E-02 1.43E-01 9.00E-01

Pancreas 9.79E-02 1.07E-01 1.64E-01 2.52E-01 3.84E-01

Salivary Glands 3.85E-01 4.19E-01 5.78E-01 7.83E-01 1.21E+00

Red Marrow 3.03E-01 2.23E-01 2.13E-01 2.18E-01 2.64E-01

Osteogenic Cells 2.04E-01 1.46E-01 1.56E-01 1.71E-01 1.87E-01

Spleen 9.24E-02 1.00E-01 1.54E-01 2.27E-01 3.88E-01

Thymus 1.81E+00 2.21E+00 4.42E+00 8.02E+00 1.49E+01

Thyroid 7.34E+02 1.01E+03 1.48E+03 3.23E+03 5.69E+03

Urinary Bladder Wall 4.13E-01 4.18E-01 6.34E-01 9.95E-01 1.89E+00

Uterus 6.29E-02 7.75E-02 1.25E-01 1.88E-01 3.11E-01

Total Body 3.76E-01 3.81E-01 5.85E-01 9.02E-01 1.55E+00

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.42E-02 1.03E-01 1.54E-01 2.27E-01 3.71E-01

Brain 1.00E-01 1.18E-01 1.87E-01 2.69E-01 4.04E-01

Breasts 1.69E-01 2.09E-01 0.00E+00 0.00E+00 0.00E+00

Esophagus 2.11E+00 2.50E+00 3.63E+00 5.31E+00 6.47E+00

Eyes 9.38E-02 1.28E-01 1.90E-01 2.90E-01 4.80E-01

Gallbladder Wall 6.54E-02 7.60E-02 1.14E-01 1.77E-01 3.01E-01

Left colon 6.45E-02 8.39E-02 1.31E-01 2.04E-01 3.30E-01

Small Intestine 3.79E-01 4.24E-01 7.04E-01 9.97E-01 1.33E+00

Stomach Wall 5.65E-01 6.68E-01 1.09E+00 1.53E+00 1.99E+00

Right colon 4.66E-02 5.83E-02 8.36E-02 1.37E-01 2.36E-01

Rectum 4.72E-02 5.80E-02 9.01E-02 1.35E-01 2.32E-01

Heart Wall 2.62E-01 2.99E-01 4.35E-01 5.92E-01 9.19E-01

Kidneys 7.34E-02 8.47E-02 1.26E-01 1.96E-01 3.12E-01

Liver 9.61E-02 1.11E-01 1.68E-01 2.50E-01 4.11E-01

Lungs 4.86E-01 5.43E-01 7.63E-01 1.03E+00 1.55E+00

Ovaries 4.77E-02 5.64E-02 8.47E-02 1.43E-01 9.00E-01

Pancreas 1.06E-01 1.24E-01 1.93E-01 2.87E-01 4.65E-01

Prostate 4.10E-02 5.49E-02 1.18E-01 1.36E-01 2.31E-01

Salivary Glands 3.28E-01 3.87E-01 5.59E-01 7.59E-01 1.19E+00

Red Marrow 2.63E-01 2.30E-01 2.28E-01 2.33E-01 2.86E-01

Osteogenic Cells 1.84E-01 1.52E-01 1.65E-01 1.88E-01 2.06E-01

Spleen 8.90E-02 1.04E-01 1.61E-01 2.36E-01 3.97E-01

Testes 2.40E-02 3.14E-02 5.65E-02 8.23E-02 1.53E-01

Thymus 1.32E+00 1.78E+00 3.30E+00 6.24E+00 1.50E+01

Thyroid 6.80E+02 1.01E+03 1.48E+03 3.24E+03 5.67E+03

Urinary Bladder Wall 3.77E-01 4.27E-01 6.52E-01 1.02E+00 1.93E+00

Uterus 6.29E-02 7.75E-02 1.25E-01 1.88E-01 3.11E-01

Total Body 3.30E-01 3.68E-01 5.86E-01 9.06E-01 1.56E+00

Effective Dose 2.89E+01 4.29E+01 6.27E+01 1.37E+02 2.39E+02

Radiation Dose Estimates (mSv/MBq) for 131I Iodide, 55% uptake

Biokinetic data: ICRP 53 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.80E-02 1.05E-01 1.59E-01 2.47E-01 4.00E-01

Brain 1.04E-01 1.34E-01 2.13E-01 3.03E-01 4.60E-01

Esophagus 2.33E+00 2.99E+00 4.48E+00 7.80E+00 1.10E+01

Eyes 8.52E-02 1.31E-01 2.00E-01 2.75E-01 4.84E-01

Gallbladder Wall 7.18E-02 8.99E-02 1.36E-01 2.17E-01 3.64E-01

Left colon 7.34E-02 1.10E-01 1.59E-01 2.47E-01 3.96E-01

Small Intestine 3.44E-01 4.27E-01 7.13E-01 1.01E+00 1.35E+00

Stomach Wall 5.65E-01 7.03E-01 1.15E+00 1.60E+00 2.10E+00

Right colon 4.01E-02 5.96E-02 9.54E-02 1.60E-01 2.83E-01

Rectum 3.97E-02 4.94E-02 8.41E-02 1.29E-01 2.25E-01

Heart Wall 2.62E-01 3.34E-01 4.90E-01 6.48E-01 1.03E+00

Kidneys 6.84E-02 8.71E-02 1.32E-01 2.00E-01 3.29E-01

Liver 1.03E-01 1.33E-01 2.01E-01 3.00E-01 4.83E-01

Lungs 5.49E-01 6.76E-01 9.54E-01 1.24E+00 1.96E+00

Pancreas 1.23E-01 1.52E-01 2.43E-01 3.49E-01 5.97E-01

Prostate 3.93E-02 5.31E-02 1.10E-01 1.34E-01 2.30E-01

Salivary Glands 3.30E-01 4.28E-01 6.49E-01 8.80E-01 1.40E+00

Red Marrow 2.68E-01 2.84E-01 2.88E-01 2.88E-01 3.45E-01

Osteogenic Cells 1.95E-01 1.88E-01 2.05E-01 2.39E-01 2.53E-01

Spleen 9.61E-02 1.20E-01 1.88E-01 2.72E-01 4.50E-01

Testes 2.37E-02 3.11E-02 5.52E-02 8.23E-02 1.53E-01

Thymus 1.02E+00 1.64E+00 2.66E+00 5.43E+00 1.84E+01

Thyroid 7.69E+02 1.24E+03 1.81E+03 3.96E+03 6.89E+03

Urinary Bladder Wall 2.85E-01 3.67E-01 5.64E-01 8.80E-01 1.67E+00

Total Body 3.42E-01 4.27E-01 7.03E-01 1.09E+00 1.88E+00

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 9.82E-02 1.24E-01 1.82E-01 2.53E-01 4.14E-01

Brain 1.33E-01 1.43E-01 2.26E-01 3.23E-01 4.71E-01

Breasts 2.02E-01 2.50E-01 ----- ----- -----

Esophagus 2.84E+00 3.11E+00 4.36E+00 5.10E+00 4.71E+00

Eyes 1.36E-01 1.71E-01 2.46E-01 4.01E-01 6.33E-01

Gallbladder Wall 7.15E-02 7.66E-02 1.13E-01 1.68E-01 2.93E-01

Left colon 6.19E-02 6.93E-02 1.21E-01 1.93E-01 3.11E-01

Small Intestine 4.18E-01 4.26E-01 7.04E-01 9.98E-01 1.33E+00

Stomach Wall 5.92E-01 6.65E-01 1.08E+00 1.52E+00 1.98E+00

Right colon 5.72E-02 6.30E-02 7.96E-02 1.28E-01 2.16E-01

Rectum 5.04E-02 6.06E-02 8.90E-02 1.33E-01 2.28E-01

Heart Wall 3.64E-01 3.81E-01 5.43E-01 7.54E-01 1.14E+00

Kidneys 8.07E-02 8.43E-02 1.26E-01 2.01E-01 3.11E-01

Liver 1.18E-01 1.23E-01 1.84E-01 2.69E-01 4.48E-01

Lungs 6.34E-01 6.38E-01 8.85E-01 1.22E+00 1.75E+00

Ovaries 4.66E-02 5.52E-02 8.45E-02 1.43E-01 1.04E+00

Pancreas 1.05E-01 1.15E-01 1.77E-01 2.72E-01 4.14E-01

Salivary Glands 4.67E-01 5.07E-01 6.96E-01 9.39E-01 1.45E+00

Red Marrow 3.66E-01 2.67E-01 2.51E-01 2.54E-01 2.98E-01

Osteogenic Cells 2.46E-01 1.73E-01 1.84E-01 2.01E-01 2.16E-01

Spleen 1.00E-01 1.08E-01 1.68E-01 2.47E-01 4.23E-01

Thymus 2.22E+00 2.69E+00 5.38E+00 9.77E+00 1.81E+01

Thyroid 9.02E+02 1.24E+03 1.81E+03 3.94E+03 6.94E+03

Urinary Bladder Wall 3.46E-01 3.51E-01 5.32E-01 8.36E-01 1.58E+00

Uterus 6.00E-02 7.38E-02 1.19E-01 1.82E-01 3.04E-01

Total Body 4.53E-01 4.57E-01 6.99E-01 1.08E+00 1.85E+00

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 9.31E-02 1.14E-01 1.70E-01 2.50E-01 4.07E-01

Brain 1.18E-01 1.39E-01 2.20E-01 3.13E-01 4.65E-01

Breasts 2.02E-01 2.50E-01 0.00E+00 0.00E+00 0.00E+00

Esophagus 2.58E+00 3.05E+00 4.42E+00 6.45E+00 7.86E+00

Eyes 1.11E-01 1.51E-01 2.23E-01 3.38E-01 5.58E-01

Gallbladder Wall 7.17E-02 8.33E-02 1.25E-01 1.93E-01 3.28E-01

Left colon 6.77E-02 8.98E-02 1.40E-01 2.20E-01 3.53E-01

Small Intestine 3.81E-01 4.26E-01 7.08E-01 1.00E+00 1.34E+00

Stomach Wall 5.79E-01 6.84E-01 1.11E+00 1.56E+00 2.04E+00

Right colon 4.87E-02 6.13E-02 8.75E-02 1.44E-01 2.50E-01

Rectum 4.50E-02 5.50E-02 8.66E-02 1.31E-01 2.26E-01

Heart Wall 3.13E-01 3.57E-01 5.17E-01 7.01E-01 1.08E+00

Kidneys 7.45E-02 8.57E-02 1.29E-01 2.01E-01 3.20E-01

Liver 1.11E-01 1.28E-01 1.93E-01 2.84E-01 4.66E-01

Lungs 5.91E-01 6.57E-01 9.19E-01 1.23E+00 1.85E+00

Ovaries 4.66E-02 5.52E-02 8.45E-02 1.43E-01 1.04E+00

Pancreas 1.14E-01 1.33E-01 2.10E-01 3.11E-01 5.05E-01

Prostate 3.93E-02 5.31E-02 1.10E-01 1.34E-01 2.30E-01

Salivary Glands 3.98E-01 4.67E-01 6.73E-01 9.10E-01 1.42E+00

Red Marrow 3.17E-01 2.75E-01 2.70E-01 2.71E-01 3.21E-01

Osteogenic Cells 2.20E-01 1.81E-01 1.95E-01 2.20E-01 2.35E-01

Spleen 9.82E-02 1.14E-01 1.78E-01 2.59E-01 4.36E-01

Testes 2.37E-02 3.11E-02 5.52E-02 8.23E-02 1.53E-01

Thymus 1.62E+00 2.17E+00 4.02E+00 7.60E+00 1.83E+01

Thyroid 8.36E+02 1.24E+03 1.81E+03 3.95E+03 6.92E+03

Urinary Bladder Wall 3.16E-01 3.59E-01 5.48E-01 8.58E-01 1.63E+00

Uterus 6.00E-02 7.38E-02 1.19E-01 1.82E-01 3.04E-01

Total Body 3.98E-01 4.42E-01 7.01E-01 1.08E+00 1.86E+00

Effective Dose 3.54E+01 5.25E+01 7.65E+01 1.67E+02 2.92E+02

Radiation Dose Estimates (mSv/MBq) for 123I Tumor Associated Antibodies - Intact

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adrenals 5.91E-02 7.36E-02 1.03E-01 1.41E-01 2.49E-01

Brain 3.26E-03 4.24E-03 6.44E-03 1.05E-02 2.05E-02

Esophagus 1.73E-02 2.24E-02 3.41E-02 4.80E-02 8.06E-02

Eyes 3.28E-03 4.27E-03 6.47E-03 1.06E-02 2.06E-02

Gallbladder Wall 6.01E-02 7.42E-02 1.02E-01 1.47E-01 2.33E-01

Left colon 1.39E-02 2.03E-02 3.08E-02 4.38E-02 7.43E-02

Small Intestine 1.08E-02 1.37E-02 2.10E-02 3.06E-02 4.91E-02

Stomach Wall 2.00E-02 2.60E-02 3.91E-02 5.78E-02 9.36E-02

Right colon 1.80E-02 2.23E-02 3.59E-02 5.11E-02 8.06E-02

Rectum 6.33E-03 8.22E-03 1.22E-02 1.72E-02 2.86E-02

Heart Wall 1.86E-02 2.39E-02 3.55E-02 5.10E-02 8.71E-02

Kidneys 6.55E-02 8.12E-02 1.12E-01 1.68E-01 2.56E-01

Liver 1.65E-01 2.17E-01 3.16E-01 4.35E-01 6.92E-01

Lungs 1.58E-02 2.00E-02 2.96E-02 4.20E-02 6.86E-02

Pancreas 2.32E-02 2.88E-02 4.25E-02 6.36E-02 1.13E-01

Prostate 5.04E-03 6.67E-03 1.04E-02 1.52E-02 2.63E-02

Salivary Glands 3.54E-03 4.48E-03 6.90E-03 1.10E-02 1.96E-02

Red Marrow 4.05E-02 4.47E-02 6.91E-02 1.23E-01 2.94E-01

Osteogenic Cells 3.09E-02 3.74E-02 5.61E-02 8.84E-02 1.97E-01

Spleen 2.45E-01 2.79E-01 4.29E-01 6.52E-01 1.07E+00

Testes 2.50E-03 3.29E-03 5.10E-03 8.11E-03 1.46E-02

Thymus 8.31E-03 1.08E-02 1.53E-02 2.57E-02 4.68E-02

Thyroid 5.14E-03 6.58E-03 1.02E-02 1.57E-02 2.75E-02

Urinary Bladder Wall 4.24E-03 5.63E-03 8.78E-03 1.29E-02 2.24E-02

Total Body 9.34E-03 1.16E-02 1.86E-02 2.91E-02 5.10E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 9.30E-02 9.82E-02 1.40E-01 1.93E-01 3.18E-01

Brain 4.33E-03 4.28E-03 6.42E-03 1.30E-02 2.46E-02

Breasts 6.64E-03 7.01E-03 ----- ----- -----

Esophagus 2.30E-02 2.49E-02 3.84E-02 5.71E-02 1.13E-01

Eyes 4.35E-03 4.30E-03 6.44E-03 1.05E-02 2.05E-02

Gallbladder Wall 4.14E-02 4.47E-02 6.51E-02 8.96E-02 1.55E-01

Left colon 1.75E-02 1.85E-02 2.53E-02 3.67E-02 6.21E-02

Small Intestine 1.41E-02 1.51E-02 2.22E-02 3.30E-02 5.50E-02

Stomach Wall 2.66E-02 2.84E-02 4.11E-02 6.04E-02 9.67E-02

Right colon 1.65E-02 1.81E-02 2.97E-02 4.45E-02 7.08E-02

Rectum 7.71E-03 7.94E-03 1.17E-02 1.66E-02 2.76E-02

Heart Wall 1.49E-02 1.58E-02 2.36E-02 3.55E-02 6.43E-02

Kidneys 7.82E-02 8.69E-02 1.16E-01 1.74E-01 2.63E-01

Liver 2.06E-01 2.18E-01 3.19E-01 4.36E-01 6.98E-01

Lungs 1.87E-02 2.00E-02 2.81E-02 4.09E-02 6.44E-02

Ovaries 8.35E-03 8.75E-03 1.28E-02 1.87E-02 3.01E-02

Pancreas 4.13E-02 4.52E-02 6.50E-02 9.72E-02 1.47E-01

Salivary Glands 4.06E-03 4.45E-03 6.80E-03 1.09E-02 1.93E-02

Red Marrow 5.03E-02 4.58E-02 6.68E-02 1.20E-01 2.88E-01

Osteogenic Cells 3.50E-02 3.69E-02 5.32E-02 8.26E-02 1.83E-01

Spleen 2.79E-01 2.82E-01 4.32E-01 6.55E-01 1.07E+00

Thymus 9.87E-03 1.05E-02 1.51E-02 2.36E-02 4.19E-02

Thyroid 5.76E-03 6.25E-03 9.47E-03 1.47E-02 2.57E-02

Urinary Bladder Wall 4.99E-03 5.63E-03 8.61E-03 1.27E-02 2.20E-02

Uterus 6.93E-03 7.34E-03 1.09E-02 1.62E-02 2.65E-02

Total Body 1.60E-02 1.22E-02 1.87E-02 2.90E-02 5.17E-02

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.60E-02 8.59E-02 1.21E-01 1.67E-01 2.84E-01

Brain 3.79E-03 4.26E-03 6.43E-03 1.18E-02 2.25E-02

Breasts 6.64E-03 7.01E-03 ----- ----- -----

Esophagus 2.02E-02 2.37E-02 3.62E-02 5.26E-02 9.68E-02

Eyes 3.82E-03 4.28E-03 6.46E-03 1.06E-02 2.06E-02

Gallbladder Wall 5.08E-02 5.95E-02 8.35E-02 1.18E-01 1.94E-01

Left colon 1.57E-02 1.94E-02 2.81E-02 4.02E-02 6.82E-02

Small Intestine 1.24E-02 1.44E-02 2.16E-02 3.18E-02 5.21E-02

Stomach Wall 2.33E-02 2.72E-02 4.01E-02 5.91E-02 9.51E-02

Right colon 1.72E-02 2.02E-02 3.28E-02 4.78E-02 7.57E-02

Rectum 7.02E-03 8.08E-03 1.20E-02 1.69E-02 2.81E-02

Heart Wall 1.67E-02 1.99E-02 2.96E-02 4.32E-02 7.57E-02

Kidneys 7.19E-02 8.40E-02 1.14E-01 1.71E-01 2.60E-01

Liver 1.85E-01 2.18E-01 3.18E-01 4.35E-01 6.95E-01

Lungs 1.72E-02 2.00E-02 2.89E-02 4.15E-02 6.65E-02

Ovaries 8.35E-03 8.75E-03 1.28E-02 1.87E-02 3.01E-02

Pancreas 3.22E-02 3.70E-02 5.38E-02 8.04E-02 1.30E-01

Prostate 5.04E-03 6.67E-03 1.04E-02 1.52E-02 2.63E-02

Salivary Glands 3.80E-03 4.47E-03 6.85E-03 1.09E-02 1.94E-02

Red Marrow 4.54E-02 4.52E-02 6.80E-02 1.22E-01 2.91E-01

Osteogenic Cells 3.30E-02 3.71E-02 5.47E-02 8.55E-02 1.90E-01

Spleen 2.62E-01 2.81E-01 4.30E-01 6.54E-01 1.07E+00

Testes 2.50E-03 3.29E-03 5.10E-03 8.11E-03 1.46E-02

Thymus 9.09E-03 1.07E-02 1.52E-02 2.46E-02 4.43E-02

Thyroid 5.45E-03 6.42E-03 9.81E-03 1.52E-02 2.66E-02

Urinary Bladder Wall 4.62E-03 5.63E-03 8.70E-03 1.28E-02 2.22E-02

Uterus 6.93E-03 7.34E-03 1.09E-02 1.62E-02 2.65E-02

Total Body 1.27E-02 1.19E-02 1.87E-02 2.91E-02 5.13E-02

Effective Dose 2.80E-02 3.14E-02 4.58E-02 6.88E-02 1.24E-01

Radiation Dose Estimates (mSv/MBq) for 123I Tumor Associated Antibodies – Fab2

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adrenals 5.02E-02 6.38E-02 8.99E-02 1.26E-01 2.01E-01

Brain 2.77E-03 3.54E-03 5.70E-03 9.32E-03 1.71E-02

Esophagus 8.98E-03 1.18E-02 1.82E-02 2.60E-02 4.44E-02

Eyes 2.78E-03 3.55E-03 5.70E-03 9.36E-03 1.72E-02

Gallbladder Wall 2.64E-02 3.30E-02 4.58E-02 6.71E-02 1.06E-01

Left colon 1.07E-02 1.41E-02 2.00E-02 2.90E-02 4.90E-02

Small Intestine 7.87E-03 9.94E-03 1.54E-02 2.31E-02 3.81E-02

Stomach Wall 1.11E-02 1.44E-02 2.20E-02 3.25E-02 5.32E-02

Right colon 1.08E-02 1.37E-02 2.26E-02 3.33E-02 5.42E-02

Rectum 4.92E-03 6.24E-03 9.60E-03 1.43E-02 2.51E-02

Heart Wall 9.28E-03 1.19E-02 1.81E-02 2.63E-02 4.54E-02

Kidneys 1.76E-01 2.13E-01 2.86E-01 4.41E-01 6.61E-01

Liver 6.52E-02 8.59E-02 1.25E-01 1.72E-01 2.75E-01

Lungs 8.06E-03 1.03E-02 1.54E-02 2.25E-02 3.79E-02

Pancreas 1.31E-02 1.63E-02 2.45E-02 3.68E-02 6.32E-02

Prostate 4.72E-03 6.24E-03 9.49E-03 1.43E-02 2.55E-02

Salivary Glands 3.13E-03 4.00E-03 6.40E-03 1.04E-02 1.87E-02

Red Marrow 1.55E-02 1.73E-02 2.74E-02 4.48E-02 1.03E-01

Osteogenic Cells 1.47E-02 1.73E-02 2.66E-02 3.86E-02 8.11E-02

Spleen 1.10E-01 1.27E-01 1.94E-01 2.93E-01 4.80E-01

Testes 2.61E-03 3.32E-03 5.12E-03 8.26E-03 1.50E-02

Thymus 4.99E-03 6.55E-03 9.56E-03 1.58E-02 2.87E-02

Thyroid 3.80E-03 4.88E-03 7.79E-03 1.23E-02 2.22E-02

Urinary Bladder Wall 3.88E-03 5.21E-03 7.88E-03 1.20E-02 2.16E-02

Total Body 6.19E-03 7.67E-03 1.23E-02 1.93E-02 3.39E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.76E-02 6.24E-02 8.92E-02 1.24E-01 1.99E-01

Brain 3.53E-03 3.58E-03 5.69E-03 1.03E-02 1.88E-02

Breasts 4.24E-03 4.54E-03 ----- ----- -----

Esophagus 1.15E-02 1.27E-02 1.98E-02 2.96E-02 5.62E-02

Eyes 3.54E-03 3.59E-03 5.69E-03 9.33E-03 1.71E-02

Gallbladder Wall 2.70E-02 2.93E-02 4.28E-02 6.04E-02 9.94E-02

Left colon 1.20E-02 1.27E-02 1.72E-02 2.55E-02 4.48E-02

Small Intestine 1.04E-02 1.12E-02 1.67E-02 2.55E-02 4.32E-02

Stomach Wall 1.53E-02 1.64E-02 2.40E-02 3.54E-02 5.66E-02

Right colon 1.12E-02 1.24E-02 2.05E-02 3.17E-02 5.30E-02

Rectum 5.65E-03 5.87E-03 8.99E-03 1.34E-02 2.38E-02

Heart Wall 8.54E-03 9.01E-03 1.36E-02 2.06E-02 3.69E-02

Kidneys 1.97E-01 2.22E-01 2.87E-01 4.42E-01 6.61E-01

Liver 8.15E-02 8.65E-02 1.26E-01 1.73E-01 2.77E-01

Lungs 9.73E-03 1.03E-02 1.48E-02 2.20E-02 3.59E-02

Ovaries 6.29E-03 6.73E-03 1.01E-02 1.56E-02 2.65E-02

Pancreas 2.27E-02 2.49E-02 3.62E-02 5.43E-02 8.23E-02

Salivary Glands 3.50E-03 4.02E-03 6.34E-03 1.03E-02 1.86E-02

Red Marrow 1.93E-02 1.75E-02 2.45E-02 4.20E-02 9.70E-02

Osteogenic Cells 1.69E-02 1.69E-02 2.23E-02 3.19E-02 6.45E-02

Spleen 1.29E-01 1.31E-01 1.99E-01 3.01E-01 4.90E-01

Thymus 5.96E-03 6.45E-03 9.46E-03 1.49E-02 2.67E-02

Thyroid 4.20E-03 4.76E-03 7.48E-03 1.19E-02 2.13E-02

Urinary Bladder Wall 4.48E-03 5.08E-03 7.48E-03 1.14E-02 2.05E-02

Uterus 5.63E-03 6.13E-03 9.54E-03 1.47E-02 2.49E-02

Total Body 9.76E-03 7.94E-03 1.22E-02 1.91E-02 3.39E-02

Gender Average

Adrenals 5.39E-02 6.31E-02 8.95E-02 1.25E-01 2.00E-01

Brain 3.15E-03 3.56E-03 5.69E-03 9.83E-03 1.79E-02

Breasts 4.24E-03 4.54E-03 ----- ----- -----

Esophagus 1.03E-02 1.22E-02 1.90E-02 2.78E-02 5.03E-02

Eyes 3.16E-03 3.57E-03 5.70E-03 9.35E-03 1.72E-02

Gallbladder Wall 2.67E-02 3.11E-02 4.43E-02 6.38E-02 1.03E-01

Left colon 1.13E-02 1.34E-02 1.86E-02 2.73E-02 4.69E-02

Small Intestine 9.12E-03 1.06E-02 1.60E-02 2.43E-02 4.07E-02

Stomach Wall 1.32E-02 1.54E-02 2.30E-02 3.40E-02 5.49E-02

Right colon 1.10E-02 1.30E-02 2.15E-02 3.25E-02 5.36E-02

Rectum 5.28E-03 6.05E-03 9.30E-03 1.39E-02 2.44E-02

Heart Wall 8.91E-03 1.05E-02 1.58E-02 2.34E-02 4.12E-02

Kidneys 1.86E-01 2.17E-01 2.86E-01 4.41E-01 6.61E-01

Liver 7.33E-02 8.62E-02 1.26E-01 1.72E-01 2.76E-01

Lungs 8.89E-03 1.03E-02 1.51E-02 2.22E-02 3.69E-02

Ovaries 6.29E-03 6.73E-03 1.01E-02 1.56E-02 2.65E-02

Pancreas 1.79E-02 2.06E-02 3.03E-02 4.55E-02 7.27E-02

Prostate 4.72E-03 6.24E-03 9.49E-03 1.43E-02 2.55E-02

Salivary Glands 3.31E-03 4.01E-03 6.37E-03 1.03E-02 1.86E-02

Red Marrow 1.74E-02 1.74E-02 2.59E-02 4.34E-02 1.00E-01

Osteogenic Cells 1.58E-02 1.71E-02 2.44E-02 3.53E-02 7.28E-02

Spleen 1.19E-01 1.29E-01 1.96E-01 2.97E-01 4.85E-01

Testes 2.61E-03 3.32E-03 5.12E-03 8.26E-03 1.50E-02

Thymus 5.48E-03 6.50E-03 9.51E-03 1.54E-02 2.77E-02

Thyroid 4.00E-03 4.82E-03 7.64E-03 1.21E-02 2.17E-02

Urinary Bladder Wall 4.18E-03 5.14E-03 7.68E-03 1.17E-02 2.10E-02

Uterus 5.63E-03 6.13E-03 9.54E-03 1.47E-02 2.49E-02

Total Body 7.98E-03 7.80E-03 1.22E-02 1.92E-02 3.39E-02

Effective Dose 1.49E-02 1.70E-02 2.45E-02 3.65E-02 6.33E-02

Radiation Dose Estimates (mSv/MBq) for 123I Tumor Associated Antibodies – Fab

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adrenals 4.49E-02 5.77E-02 8.16E-02 1.15E-01 1.72E-01

Brain 2.14E-03 2.71E-03 4.48E-03 7.34E-03 1.31E-02

Esophagus 4.66E-03 6.17E-03 9.68E-03 1.40E-02 2.45E-02

Eyes 2.15E-03 2.71E-03 4.47E-03 7.36E-03 1.32E-02

Gallbladder Wall 1.05E-02 1.35E-02 1.92E-02 2.88E-02 4.58E-02

Left colon 8.58E-03 1.06E-02 1.40E-02 2.05E-02 3.40E-02

Small Intestine 6.01E-03 7.54E-03 1.17E-02 1.78E-02 2.97E-02

Stomach Wall 6.17E-03 7.97E-03 1.23E-02 1.83E-02 3.02E-02

Right colon 6.98E-03 9.11E-03 1.54E-02 2.33E-02 3.89E-02

Rectum 3.81E-03 4.78E-03 7.48E-03 1.15E-02 2.04E-02

Heart Wall 4.51E-03 5.80E-03 8.98E-03 1.33E-02 2.34E-02

Kidneys 2.24E-01 2.71E-01 3.61E-01 5.59E-01 8.36E-01

Liver 1.94E-02 2.56E-02 3.72E-02 5.14E-02 8.29E-02

Lungs 4.04E-03 5.23E-03 7.95E-03 1.20E-02 2.10E-02

Pancreas 7.81E-03 9.78E-03 1.48E-02 2.24E-02 3.67E-02

Prostate 4.02E-03 5.29E-03 7.98E-03 1.21E-02 2.19E-02

Salivary Glands 2.45E-03 3.14E-03 5.11E-03 8.33E-03 1.52E-02

Red Marrow 5.66E-03 6.43E-03 1.11E-02 1.45E-02 3.04E-02

Osteogenic Cells 7.73E-03 8.65E-03 1.40E-02 1.77E-02 3.39E-02

Spleen 3.46E-02 4.12E-02 6.25E-02 9.31E-02 1.51E-01

Testes 2.20E-03 2.76E-03 4.26E-03 6.92E-03 1.26E-02

Thymus 3.01E-03 3.98E-03 5.94E-03 9.73E-03 1.75E-02

Thyroid 2.69E-03 3.47E-03 5.64E-03 9.04E-03 1.65E-02

Urinary Bladder Wall 3.17E-03 4.28E-03 6.42E-03 9.86E-03 1.80E-02

Total Body 4.33E-03 5.35E-03 8.53E-03 1.35E-02 2.37E-02

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 3.86E-02 4.30E-02 6.18E-02 8.62E-02 1.34E-01

Brain 2.67E-03 2.75E-03 4.47E-03 7.55E-03 1.34E-02

Breasts 2.70E-03 2.92E-03 ----- ----- -----

Esophagus 5.70E-03 6.47E-03 1.01E-02 1.52E-02 2.70E-02

Eyes 2.68E-03 2.76E-03 4.48E-03 7.34E-03 1.31E-02

Gallbladder Wall 1.97E-02 2.14E-02 3.13E-02 4.51E-02 7.11E-02

Left colon 8.62E-03 9.14E-03 1.22E-02 1.84E-02 3.32E-02

Small Intestine 8.02E-03 8.71E-03 1.31E-02 2.01E-02 3.43E-02

Stomach Wall 8.86E-03 9.44E-03 1.41E-02 2.08E-02 3.33E-02

Right colon 8.09E-03 9.05E-03 1.53E-02 2.41E-02 4.17E-02

Rectum 4.17E-03 4.36E-03 6.80E-03 1.05E-02 1.91E-02

Heart Wall 4.93E-03 5.17E-03 7.91E-03 1.20E-02 2.12E-02

Kidneys 2.48E-01 2.80E-01 3.60E-01 5.58E-01 8.33E-01

Liver 2.45E-02 2.60E-02 3.79E-02 5.21E-02 8.39E-02

Lungs 5.01E-03 5.24E-03 7.77E-03 1.18E-02 2.00E-02

Ovaries 4.78E-03 5.19E-03 7.90E-03 1.25E-02 2.17E-02

Pancreas 1.33E-02 1.46E-02 2.14E-02 3.23E-02 4.88E-02

Salivary Glands 2.72E-03 3.18E-03 5.08E-03 8.27E-03 1.51E-02

Red Marrow 7.15E-03 6.46E-03 8.15E-03 1.24E-02 2.53E-02

Osteogenic Cells 8.90E-03 8.32E-03 9.67E-03 1.19E-02 1.93E-02

Spleen 4.44E-02 4.61E-02 6.83E-02 1.02E-01 1.66E-01

Thymus 3.57E-03 3.96E-03 5.90E-03 9.40E-03 1.69E-02

Thyroid 2.96E-03 3.44E-03 5.52E-03 8.93E-03 1.60E-02

Urinary Bladder Wall 3.60E-03 4.08E-03 5.92E-03 9.12E-03 1.66E-02

Uterus 4.40E-03 4.90E-03 7.82E-03 1.23E-02 2.08E-02

Total Body 6.38E-03 5.47E-03 8.42E-03 1.32E-02 2.34E-02

Gender Average

Adrenals 4.17E-02 5.04E-02 7.17E-02 1.01E-01 1.53E-01

Brain 2.41E-03 2.73E-03 4.47E-03 7.45E-03 1.33E-02

Breasts 2.70E-03 2.92E-03 ----- ----- -----

Esophagus 5.18E-03 6.32E-03 9.90E-03 1.46E-02 2.58E-02

Eyes 2.41E-03 2.74E-03 4.47E-03 7.35E-03 1.32E-02

Gallbladder Wall 1.51E-02 1.75E-02 2.52E-02 3.70E-02 5.85E-02

Left colon 8.60E-03 9.86E-03 1.31E-02 1.94E-02 3.36E-02

Small Intestine 7.01E-03 8.13E-03 1.24E-02 1.90E-02 3.20E-02

Stomach Wall 7.52E-03 8.70E-03 1.32E-02 1.96E-02 3.18E-02

Right colon 7.53E-03 9.08E-03 1.53E-02 2.37E-02 4.03E-02

Rectum 3.99E-03 4.57E-03 7.14E-03 1.10E-02 1.98E-02

Heart Wall 4.72E-03 5.49E-03 8.44E-03 1.27E-02 2.23E-02

Kidneys 2.36E-01 2.75E-01 3.61E-01 5.58E-01 8.34E-01

Liver 2.19E-02 2.58E-02 3.76E-02 5.18E-02 8.34E-02

Lungs 4.53E-03 5.23E-03 7.86E-03 1.19E-02 2.05E-02

Ovaries 4.78E-03 5.19E-03 7.90E-03 1.25E-02 2.17E-02

Pancreas 1.05E-02 1.22E-02 1.81E-02 2.73E-02 4.27E-02

Prostate 4.02E-03 5.29E-03 7.98E-03 1.21E-02 2.19E-02

Salivary Glands 2.59E-03 3.16E-03 5.10E-03 8.30E-03 1.51E-02

Red Marrow 6.41E-03 6.45E-03 9.62E-03 1.34E-02 2.79E-02

Osteogenic Cells 8.31E-03 8.49E-03 1.18E-02 1.48E-02 2.66E-02

Spleen 3.95E-02 4.36E-02 6.54E-02 9.76E-02 1.58E-01

Testes 2.20E-03 2.76E-03 4.26E-03 6.92E-03 1.26E-02

Thymus 3.29E-03 3.97E-03 5.92E-03 9.56E-03 1.72E-02

Thyroid 2.83E-03 3.46E-03 5.58E-03 8.99E-03 1.63E-02

Urinary Bladder Wall 3.38E-03 4.18E-03 6.17E-03 9.49E-03 1.73E-02

Uterus 4.40E-03 4.90E-03 7.82E-03 1.23E-02 2.08E-02

Total Body 5.36E-03 5.41E-03 8.48E-03 1.33E-02 2.35E-02

Effective Dose 8.58E-03 9.87E-03 1.40E-02 2.08E-02 3.45E-02

Radiation Dose Estimates (mSv/MBq) for 131I Tumor Associated Antibodies - Intact

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adrenals 4.70E-01 5.83E-01 8.18E-01 1.10E+00 1.92E+00

Brain 3.98E-02 5.10E-02 8.11E-02 1.31E-01 2.53E-01

Esophagus 1.58E-01 2.04E-01 3.16E-01 4.37E-01 7.21E-01

Eyes 4.00E-02 5.14E-02 8.16E-02 1.35E-01 2.60E-01

Gallbladder Wall 4.85E-01 5.81E-01 7.89E-01 1.13E+00 1.79E+00

Left colon 1.34E-01 1.87E-01 2.88E-01 4.08E-01 6.82E-01

Small Intestine 1.11E-01 1.40E-01 2.12E-01 3.13E-01 5.00E-01

Stomach Wall 1.82E-01 2.32E-01 3.46E-01 5.09E-01 8.11E-01

Right colon 1.70E-01 2.09E-01 3.29E-01 4.68E-01 7.27E-01

Rectum 6.89E-02 8.85E-02 1.34E-01 1.93E-01 3.23E-01

Heart Wall 1.72E-01 2.17E-01 3.21E-01 4.56E-01 7.71E-01

Kidneys 9.89E-01 1.22E+00 1.69E+00 2.62E+00 4.07E+00

Liver 2.58E+00 3.48E+00 5.26E+00 7.45E+00 1.24E+01

Lungs 1.40E-01 1.76E-01 2.61E-01 3.71E-01 6.15E-01

Pancreas 2.12E-01 2.61E-01 3.86E-01 5.54E-01 9.53E-01

Prostate 5.95E-02 7.43E-02 1.20E-01 1.80E-01 3.15E-01

Salivary Glands 4.40E-02 5.60E-02 8.74E-02 1.41E-01 2.56E-01

Red Marrow 7.16E-01 8.03E-01 1.33E+00 2.57E+00 6.62E+00

Osteogenic Cells 4.12E-01 5.25E-01 8.26E-01 1.37E+00 3.28E+00

Spleen 4.67E+00 5.36E+00 8.51E+00 1.34E+01 2.27E+01

Testes 3.46E-02 4.54E-02 7.40E-02 1.17E-01 2.18E-01

Thymus 8.66E-02 1.13E-01 1.61E-01 2.72E-01 4.82E-01

Thyroid 5.96E-02 7.57E-02 1.17E-01 1.84E-01 3.28E-01

Urinary Bladder Wall 5.12E-02 6.32E-02 1.04E-01 1.59E-01 2.78E-01

Total Body 1.43E-01 1.81E-01 3.02E-01 4.87E-01 8.85E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.20E-01 7.82E-01 1.11E+00 1.54E+00 2.55E+00

Brain 5.16E-02 5.20E-02 8.06E-02 1.55E-01 2.89E-01

Breasts 7.91E-02 8.51E-02 ----- ----- -----

Esophagus 2.11E-01 2.27E-01 3.36E-01 4.94E-01 9.52E-01

Eyes 5.19E-02 5.23E-02 8.11E-02 1.32E-01 2.54E-01

Gallbladder Wall 3.51E-01 3.79E-01 5.43E-01 7.24E-01 1.24E+00

Left colon 1.62E-01 1.72E-01 2.41E-01 3.45E-01 5.78E-01

Small Intestine 1.42E-01 1.53E-01 2.22E-01 3.25E-01 5.44E-01

Stomach Wall 2.34E-01 2.48E-01 3.57E-01 5.23E-01 8.33E-01

Right colon 1.59E-01 1.73E-01 2.74E-01 4.09E-01 6.64E-01

Rectum 8.29E-02 8.64E-02 1.29E-01 1.86E-01 3.08E-01

Heart Wall 1.47E-01 1.57E-01 2.31E-01 3.44E-01 6.07E-01

Kidneys 1.14E+00 1.29E+00 1.71E+00 2.67E+00 4.12E+00

Liver 3.26E+00 3.49E+00 5.29E+00 7.46E+00 1.25E+01

Lungs 1.65E-01 1.77E-01 2.49E-01 3.64E-01 5.90E-01

Ovaries 9.05E-02 9.62E-02 1.41E-01 2.09E-01 3.44E-01

Pancreas 3.53E-01 3.81E-01 5.43E-01 7.95E-01 1.19E+00

Salivary Glands 5.14E-02 5.64E-02 8.64E-02 1.40E-01 2.52E-01

Red Marrow 9.11E-01 8.45E-01 1.31E+00 2.55E+00 6.57E+00

Osteogenic Cells 4.30E-01 5.21E-01 8.13E-01 1.35E+00 3.23E+00

Spleen 5.36E+00 5.38E+00 8.53E+00 1.34E+01 2.27E+01

Thymus 9.97E-02 1.11E-01 1.59E-01 2.47E-01 4.28E-01

Thyroid 6.79E-02 7.36E-02 1.12E-01 1.75E-01 3.10E-01

Urinary Bladder Wall 5.88E-02 6.41E-02 1.02E-01 1.55E-01 2.68E-01

Uterus 7.84E-02 8.41E-02 1.25E-01 1.89E-01 3.17E-01

Total Body 2.06E-01 1.91E-01 3.02E-01 4.86E-01 8.90E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 5.95E-01 6.82E-01 9.63E-01 1.32E+00 2.23E+00

Brain 4.57E-02 5.15E-02 8.09E-02 1.43E-01 2.71E-01

Breasts 7.91E-02 8.51E-02 0.00E+00 0.00E+00 0.00E+00

Esophagus 1.85E-01 2.16E-01 3.26E-01 4.66E-01 8.36E-01

Eyes 4.60E-02 5.18E-02 8.14E-02 1.33E-01 2.57E-01

Gallbladder Wall 4.18E-01 4.80E-01 6.66E-01 9.25E-01 1.52E+00

Left colon 1.48E-01 1.80E-01 2.64E-01 3.76E-01 6.30E-01

Small Intestine 1.26E-01 1.46E-01 2.17E-01 3.19E-01 5.22E-01

Stomach Wall 2.08E-01 2.40E-01 3.51E-01 5.16E-01 8.22E-01

Right colon 1.65E-01 1.91E-01 3.02E-01 4.38E-01 6.96E-01

Rectum 7.59E-02 8.75E-02 1.31E-01 1.89E-01 3.16E-01

Heart Wall 1.59E-01 1.87E-01 2.76E-01 4.00E-01 6.89E-01

Kidneys 1.07E+00 1.26E+00 1.70E+00 2.65E+00 4.10E+00

Liver 2.92E+00 3.48E+00 5.27E+00 7.46E+00 1.25E+01

Lungs 1.53E-01 1.76E-01 2.55E-01 3.68E-01 6.03E-01

Ovaries 9.05E-02 9.62E-02 1.41E-01 2.09E-01 3.44E-01

Pancreas 2.82E-01 3.21E-01 4.64E-01 6.74E-01 1.07E+00

Prostate 5.95E-02 7.43E-02 1.20E-01 1.80E-01 3.15E-01

Salivary Glands 4.77E-02 5.62E-02 8.69E-02 1.41E-01 2.54E-01

Red Marrow 8.14E-01 8.24E-01 1.32E+00 2.56E+00 6.59E+00

Osteogenic Cells 4.21E-01 5.23E-01 8.20E-01 1.36E+00 3.25E+00

Spleen 5.01E+00 5.37E+00 8.52E+00 1.34E+01 2.27E+01

Testes 3.46E-02 4.54E-02 7.40E-02 1.17E-01 2.18E-01

Thymus 9.31E-02 1.12E-01 1.60E-01 2.59E-01 4.55E-01

Thyroid 6.37E-02 7.46E-02 1.15E-01 1.79E-01 3.19E-01

Urinary Bladder Wall 5.50E-02 6.37E-02 1.03E-01 1.57E-01 2.73E-01

Uterus 7.84E-02 8.41E-02 1.25E-01 1.89E-01 3.17E-01

Total Body 1.74E-01 1.86E-01 3.02E-01 4.87E-01 8.88E-01

Effective Dose 3.89E-01 4.36E-01 6.59E-01 1.04E+00 2.04E+00

Radiation Dose Estimates (mSv/MBq) for 131I Tumor Associated Antibodies – Fab2

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adrenals 1.66E-01 2.12E-01 3.06E-01 4.29E-01 6.98E-01

Brain 1.53E-02 1.95E-02 3.25E-02 5.37E-02 9.96E-02

Esophagus 3.85E-02 5.00E-02 7.86E-02 1.14E-01 1.97E-01

Eyes 1.53E-02 1.96E-02 3.25E-02 5.50E-02 1.02E-01

Gallbladder Wall 9.60E-02 1.17E-01 1.62E-01 2.36E-01 3.82E-01

Left colon 4.49E-02 5.80E-02 8.43E-02 1.24E-01 2.08E-01

Small Intestine 3.59E-02 4.53E-02 6.98E-02 1.06E-01 1.78E-01

Stomach Wall 4.65E-02 5.89E-02 9.00E-02 1.34E-01 2.20E-01

Right colon 4.60E-02 5.76E-02 9.31E-02 1.38E-01 2.24E-01

Rectum 2.42E-02 3.04E-02 4.82E-02 7.43E-02 1.29E-01

Heart Wall 3.99E-02 5.08E-02 7.75E-02 1.14E-01 1.97E-01

Kidneys 1.39E+00 1.71E+00 2.34E+00 3.74E+00 5.80E+00

Liver 4.23E-01 5.69E-01 8.59E-01 1.22E+00 2.03E+00

Lungs 3.39E-02 4.30E-02 6.56E-02 9.76E-02 1.68E-01

Pancreas 5.41E-02 6.72E-02 1.02E-01 1.50E-01 2.54E-01

Prostate 2.41E-02 2.99E-02 4.77E-02 7.45E-02 1.32E-01

Salivary Glands 1.71E-02 2.19E-02 3.56E-02 5.89E-02 1.08E-01

Red Marrow 1.10E-01 1.24E-01 2.07E-01 3.80E-01 9.56E-01

Osteogenic Cells 6.81E-02 8.47E-02 1.33E-01 2.11E-01 4.87E-01

Spleen 8.59E-01 9.91E-01 1.57E+00 2.46E+00 4.16E+00

Testes 1.55E-02 1.99E-02 3.24E-02 5.21E-02 9.79E-02

Thymus 2.46E-02 3.19E-02 4.79E-02 8.02E-02 1.45E-01

Thyroid 1.99E-02 2.56E-02 4.12E-02 6.64E-02 1.23E-01

Urinary Bladder Wall 2.05E-02 2.56E-02 4.12E-02 6.65E-02 1.17E-01

Total Body 3.91E-02 4.93E-02 8.19E-02 1.33E-01 2.41E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.93E-01 2.11E-01 3.03E-01 4.28E-01 7.12E-01

Brain 1.91E-02 2.01E-02 3.24E-02 5.78E-02 1.06E-01

Breasts 2.38E-02 2.59E-02 ----- ----- -----

Esophagus 4.93E-02 5.41E-02 8.19E-02 1.24E-01 2.29E-01

Eyes 1.92E-02 2.02E-02 3.25E-02 5.37E-02 9.96E-02

Gallbladder Wall 9.96E-02 1.08E-01 1.55E-01 2.15E-01 3.55E-01

Left colon 5.02E-02 5.28E-02 7.44E-02 1.10E-01 1.91E-01

Small Intestine 4.59E-02 4.99E-02 7.40E-02 1.12E-01 1.91E-01

Stomach Wall 6.18E-02 6.54E-02 9.59E-02 1.42E-01 2.30E-01

Right colon 4.80E-02 5.26E-02 8.47E-02 1.31E-01 2.25E-01

Rectum 2.80E-02 2.92E-02 4.57E-02 6.97E-02 1.22E-01

Heart Wall 3.89E-02 4.17E-02 6.31E-02 9.60E-02 1.70E-01

Kidneys 1.56E+00 1.78E+00 2.34E+00 3.75E+00 5.80E+00

Liver 5.35E-01 5.72E-01 8.65E-01 1.22E+00 2.04E+00

Lungs 4.06E-02 4.36E-02 6.34E-02 9.57E-02 1.62E-01

Ovaries 3.09E-02 3.34E-02 5.07E-02 7.89E-02 1.36E-01

Pancreas 8.73E-02 9.48E-02 1.37E-01 2.03E-01 3.08E-01

Salivary Glands 1.97E-02 2.24E-02 3.54E-02 5.82E-02 1.06E-01

Red Marrow 1.39E-01 1.30E-01 1.95E-01 3.71E-01 9.34E-01

Osteogenic Cells 7.20E-02 8.36E-02 1.25E-01 1.99E-01 4.60E-01

Spleen 9.97E-01 1.00E+00 1.58E+00 2.48E+00 4.19E+00

Thymus 2.87E-02 3.21E-02 4.78E-02 7.56E-02 1.35E-01

Thyroid 2.28E-02 2.55E-02 4.01E-02 6.48E-02 1.17E-01

Urinary Bladder Wall 2.28E-02 2.53E-02 3.94E-02 6.25E-02 1.09E-01

Uterus 2.84E-02 3.12E-02 4.85E-02 7.54E-02 1.31E-01

Total Body 5.40E-02 5.16E-02 8.18E-02 1.32E-01 2.41E-01

Gender Average

Adrenals 1.80E-01 2.12E-01 3.04E-01 4.28E-01 7.05E-01

Brain 1.72E-02 1.98E-02 3.24E-02 5.57E-02 1.03E-01

Breasts 2.38E-02 2.59E-02 ----- ----- -----

Esophagus 4.39E-02 5.20E-02 8.02E-02 1.19E-01 2.13E-01

Eyes 1.72E-02 1.99E-02 3.25E-02 5.43E-02 1.01E-01

Gallbladder Wall 9.78E-02 1.12E-01 1.59E-01 2.25E-01 3.69E-01

Left colon 4.76E-02 5.54E-02 7.94E-02 1.17E-01 1.99E-01

Small Intestine 4.09E-02 4.76E-02 7.19E-02 1.09E-01 1.84E-01

Stomach Wall 5.41E-02 6.22E-02 9.30E-02 1.38E-01 2.25E-01

Right colon 4.70E-02 5.51E-02 8.89E-02 1.34E-01 2.24E-01

Rectum 2.61E-02 2.98E-02 4.70E-02 7.20E-02 1.26E-01

Heart Wall 3.94E-02 4.62E-02 7.03E-02 1.05E-01 1.83E-01

Kidneys 1.48E+00 1.74E+00 2.34E+00 3.75E+00 5.80E+00

Liver 4.79E-01 5.70E-01 8.62E-01 1.22E+00 2.04E+00

Lungs 3.72E-02 4.33E-02 6.45E-02 9.67E-02 1.65E-01

Ovaries 3.09E-02 3.34E-02 5.07E-02 7.89E-02 1.36E-01

Pancreas 7.07E-02 8.10E-02 1.19E-01 1.76E-01 2.81E-01

Prostate 2.41E-02 2.99E-02 4.77E-02 7.45E-02 1.32E-01

Salivary Glands 1.84E-02 2.22E-02 3.55E-02 5.86E-02 1.07E-01

Red Marrow 1.25E-01 1.27E-01 2.01E-01 3.75E-01 9.45E-01

Osteogenic Cells 7.01E-02 8.42E-02 1.29E-01 2.05E-01 4.74E-01

Spleen 9.28E-01 9.97E-01 1.57E+00 2.47E+00 4.18E+00

Testes 1.55E-02 1.99E-02 3.24E-02 5.21E-02 9.79E-02

Thymus 2.66E-02 3.20E-02 4.79E-02 7.79E-02 1.40E-01

Thyroid 2.13E-02 2.55E-02 4.07E-02 6.56E-02 1.20E-01

Urinary Bladder Wall 2.16E-02 2.55E-02 4.03E-02 6.45E-02 1.13E-01

Uterus 2.84E-02 3.12E-02 4.85E-02 7.54E-02 1.31E-01

Total Body 4.65E-02 5.05E-02 8.18E-02 1.32E-01 2.41E-01

Effective Dose 8.78E-02 9.98E-02 1.47E-01 2.31E-01 4.24E-01

Radiation Dose Estimates (mSv/MBq) for 131I Tumor Associated Antibodies – Fab

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adrenals 1.13E-01 1.46E-01 2.14E-01 3.06E-01 4.75E-01

Brain 9.66E-03 1.23E-02 2.08E-02 3.47E-02 6.35E-02

Esophagus 1.75E-02 2.29E-02 3.64E-02 5.53E-02 9.96E-02

Eyes 9.67E-03 1.23E-02 2.08E-02 3.55E-02 6.53E-02

Gallbladder Wall 3.31E-02 4.14E-02 5.91E-02 8.92E-02 1.48E-01

Left colon 2.82E-02 3.44E-02 4.73E-02 7.11E-02 1.18E-01

Small Intestine 2.18E-02 2.74E-02 4.24E-02 6.53E-02 1.11E-01

Stomach Wall 2.21E-02 2.78E-02 4.34E-02 6.58E-02 1.09E-01

Right colon 2.42E-02 3.09E-02 5.12E-02 7.81E-02 1.30E-01

Rectum 1.52E-02 1.88E-02 3.05E-02 4.82E-02 8.48E-02

Heart Wall 1.72E-02 2.20E-02 3.46E-02 5.26E-02 9.34E-02

Kidneys 1.41E+00 1.72E+00 2.36E+00 3.78E+00 5.86E+00

Liver 8.62E-02 1.16E-01 1.73E-01 2.44E-01 4.05E-01

Lungs 1.52E-02 1.96E-02 3.07E-02 4.76E-02 8.49E-02

Pancreas 2.66E-02 3.32E-02 5.13E-02 7.68E-02 1.28E-01

Prostate 1.61E-02 1.99E-02 3.16E-02 4.99E-02 8.88E-02

Salivary Glands 1.08E-02 1.39E-02 2.29E-02 3.83E-02 7.07E-02

Red Marrow 2.78E-02 3.19E-02 5.51E-02 8.66E-02 2.02E-01

Osteogenic Cells 2.04E-02 2.42E-02 3.86E-02 5.40E-02 1.13E-01

Spleen 1.76E-01 2.06E-01 3.21E-01 4.97E-01 8.35E-01

Testes 1.04E-02 1.32E-02 2.16E-02 3.49E-02 6.58E-02

Thymus 1.29E-02 1.65E-02 2.58E-02 4.29E-02 7.86E-02

Thyroid 1.16E-02 1.50E-02 2.47E-02 4.03E-02 7.60E-02

Urinary Bladder Wall 1.34E-02 1.68E-02 2.68E-02 4.41E-02 7.74E-02

Total Body 2.09E-02 2.63E-02 4.36E-02 7.06E-02 1.28E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.01E-01 1.12E-01 1.62E-01 2.31E-01 3.86E-01

Brain 1.19E-02 1.27E-02 2.08E-02 3.53E-02 6.44E-02

Breasts 1.30E-02 1.42E-02 ----- ----- -----

Esophagus 2.14E-02 2.39E-02 3.72E-02 5.76E-02 1.01E-01

Eyes 1.19E-02 1.28E-02 2.08E-02 3.46E-02 6.34E-02

Gallbladder Wall 5.65E-02 6.15E-02 8.85E-02 1.26E-01 2.01E-01

Left colon 2.93E-02 3.07E-02 4.30E-02 6.49E-02 1.14E-01

Small Intestine 2.79E-02 3.04E-02 4.55E-02 7.01E-02 1.19E-01

Stomach Wall 3.02E-02 3.19E-02 4.76E-02 7.13E-02 1.16E-01

Right colon 2.77E-02 3.07E-02 5.00E-02 7.89E-02 1.40E-01

Rectum 1.70E-02 1.78E-02 2.84E-02 4.44E-02 7.93E-02

Heart Wall 1.92E-02 2.06E-02 3.18E-02 4.93E-02 8.70E-02

Kidneys 1.57E+00 1.79E+00 2.36E+00 3.78E+00 5.85E+00

Liver 1.09E-01 1.17E-01 1.75E-01 2.46E-01 4.08E-01

Lungs 1.86E-02 1.99E-02 3.00E-02 4.67E-02 8.16E-02

Ovaries 1.90E-02 2.08E-02 3.19E-02 5.08E-02 8.92E-02

Pancreas 4.19E-02 4.58E-02 6.70E-02 1.00E-01 1.53E-01

Salivary Glands 1.24E-02 1.43E-02 2.28E-02 3.78E-02 6.95E-02

Red Marrow 3.50E-02 3.27E-02 4.62E-02 8.06E-02 1.89E-01

Osteogenic Cells 2.21E-02 2.35E-02 3.17E-02 4.58E-02 9.36E-02

Spleen 2.13E-01 2.17E-01 3.35E-01 5.18E-01 8.69E-01

Thymus 1.50E-02 1.69E-02 2.60E-02 4.15E-02 7.55E-02

Thyroid 1.34E-02 1.52E-02 2.43E-02 4.00E-02 7.29E-02

Urinary Bladder Wall 1.46E-02 1.63E-02 2.50E-02 4.04E-02 7.06E-02

Uterus 1.79E-02 2.00E-02 3.17E-02 4.96E-02 8.72E-02

Total Body 2.78E-02 2.73E-02 4.33E-02 6.99E-02 1.28E-01

Gender Average

Adrenals 1.07E-01 1.29E-01 1.88E-01 2.68E-01 4.31E-01

Brain 1.08E-02 1.25E-02 2.08E-02 3.50E-02 6.39E-02

Breasts 1.30E-02 1.42E-02 ----- ----- -----

Esophagus 1.95E-02 2.34E-02 3.68E-02 5.64E-02 1.00E-01

Eyes 1.08E-02 1.25E-02 2.08E-02 3.51E-02 6.44E-02

Gallbladder Wall 4.48E-02 5.15E-02 7.38E-02 1.08E-01 1.75E-01

Left colon 2.87E-02 3.25E-02 4.52E-02 6.80E-02 1.16E-01

Small Intestine 2.49E-02 2.89E-02 4.39E-02 6.77E-02 1.15E-01

Stomach Wall 2.61E-02 2.98E-02 4.55E-02 6.86E-02 1.13E-01

Right colon 2.60E-02 3.08E-02 5.06E-02 7.85E-02 1.35E-01

Rectum 1.61E-02 1.83E-02 2.94E-02 4.63E-02 8.21E-02

Heart Wall 1.82E-02 2.13E-02 3.32E-02 5.10E-02 9.02E-02

Kidneys 1.49E+00 1.76E+00 2.36E+00 3.78E+00 5.85E+00

Liver 9.78E-02 1.16E-01 1.74E-01 2.45E-01 4.07E-01

Lungs 1.69E-02 1.97E-02 3.03E-02 4.72E-02 8.33E-02

Ovaries 1.90E-02 2.08E-02 3.19E-02 5.08E-02 8.92E-02

Pancreas 3.43E-02 3.95E-02 5.91E-02 8.85E-02 1.40E-01

Prostate 1.61E-02 1.99E-02 3.16E-02 4.99E-02 8.88E-02

Salivary Glands 1.16E-02 1.41E-02 2.29E-02 3.80E-02 7.01E-02

Red Marrow 3.14E-02 3.23E-02 5.06E-02 8.36E-02 1.96E-01

Osteogenic Cells 2.13E-02 2.39E-02 3.52E-02 4.99E-02 1.03E-01

Spleen 1.94E-01 2.11E-01 3.28E-01 5.07E-01 8.52E-01

Testes 1.04E-02 1.32E-02 2.16E-02 3.49E-02 6.58E-02

Thymus 1.39E-02 1.67E-02 2.59E-02 4.22E-02 7.70E-02

Thyroid 1.25E-02 1.51E-02 2.45E-02 4.01E-02 7.45E-02

Urinary Bladder Wall 1.40E-02 1.66E-02 2.59E-02 4.22E-02 7.40E-02

Uterus 1.79E-02 2.00E-02 3.17E-02 4.96E-02 8.72E-02

Total Body 2.44E-02 2.68E-02 4.34E-02 7.02E-02 1.28E-01

Effective Dose 3.92E-02 4.53E-02 6.47E-02 1.01E-01 1.73E-01

Radiation Dose Estimates (mSv/MBq) for 127Xe, Single Inhalation, 30 s Breath Hold

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.19E-04 1.52E-04 2.27E-04 3.50E-04 6.32E-04

Brain 8.41E-05 1.05E-04 1.73E-04 2.85E-04 4.95E-04

Esophagus 1.42E-04 1.82E-04 2.90E-04 4.58E-04 8.23E-04

Eyes 8.40E-05 1.05E-04 1.73E-04 2.86E-04 4.98E-04

Gallbladder Wall 1.24E-04 1.57E-04 2.48E-04 3.68E-04 5.28E-04

Left colon 1.20E-04 1.44E-04 2.27E-04 3.43E-04 6.14E-04

Small Intestine 1.19E-04 1.49E-04 2.27E-04 3.55E-04 6.26E-04

Stomach Wall 1.34E-04 1.69E-04 2.57E-04 3.90E-04 6.47E-04

Right colon 1.16E-04 1.46E-04 2.16E-04 3.50E-04 5.86E-04

Rectum 1.14E-04 1.37E-04 2.17E-04 3.29E-04 5.91E-04

Heart Wall 1.49E-04 1.88E-04 2.90E-04 4.22E-04 7.43E-04

Kidneys 1.07E-04 1.34E-04 2.04E-04 3.19E-04 5.70E-04

Liver 1.23E-04 1.56E-04 2.42E-04 3.59E-04 6.33E-04

Lungs 3.22E-04 4.16E-04 6.81E-04 1.06E-03 1.99E-03

Pancreas 1.30E-04 1.62E-04 2.46E-04 3.81E-04 6.77E-04

Prostate 1.11E-04 1.43E-04 2.06E-04 3.19E-04 5.63E-04

Salivary Glands 1.00E-04 1.28E-04 2.03E-04 3.29E-04 5.96E-04

Red Marrow 1.02E-04 1.22E-04 1.80E-04 2.70E-04 4.91E-04

Osteogenic Cells 1.52E-04 1.84E-04 2.72E-04 4.08E-04 7.67E-04

Spleen 1.14E-04 1.44E-04 2.26E-04 3.37E-04 5.99E-04

Testes 8.75E-05 1.08E-04 1.62E-04 2.57E-04 4.63E-04

Thymus 1.34E-04 1.75E-04 2.57E-04 4.09E-04 7.15E-04

Thyroid 1.27E-04 1.63E-04 2.53E-04 4.06E-04 6.92E-04

Urinary Bladder Wall 1.11E-04 1.43E-04 2.05E-04 3.20E-04 5.61E-04

Total Body 9.94E-05 1.22E-04 1.91E-04 3.01E-04 5.39E-04

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.50E-04 1.55E-04 2.30E-04 3.50E-04 6.24E-04

Brain 1.05E-04 1.07E-04 1.74E-04 2.85E-04 4.95E-04

Breasts 1.02E-04 1.08E-04 ----- ----- -----

Esophagus 1.59E-04 1.84E-04 2.86E-04 4.50E-04 7.84E-04

Eyes 1.05E-04 1.07E-04 1.74E-04 2.85E-04 4.95E-04

Gallbladder Wall 1.43E-04 1.55E-04 2.42E-04 3.58E-04 5.09E-04

Left colon 1.43E-04 1.42E-04 2.21E-04 3.34E-04 5.98E-04

Small Intestine 1.31E-04 1.49E-04 2.26E-04 3.52E-04 6.19E-04

Stomach Wall 1.54E-04 1.60E-04 2.40E-04 3.64E-04 6.10E-04

Right colon 1.42E-04 1.45E-04 2.13E-04 3.46E-04 5.77E-04

Rectum 1.40E-04 1.38E-04 2.16E-04 3.27E-04 5.87E-04

Heart Wall 1.91E-04 2.02E-04 2.96E-04 4.33E-04 7.67E-04

Kidneys 1.31E-04 1.35E-04 2.03E-04 3.18E-04 5.67E-04

Liver 1.51E-04 1.56E-04 2.40E-04 3.56E-04 6.27E-04

Lungs 3.98E-04 4.70E-04 6.72E-04 1.05E-03 1.97E-03

Ovaries 1.42E-04 1.48E-04 2.23E-04 3.48E-04 6.24E-04

Pancreas 1.54E-04 1.60E-04 2.39E-04 3.70E-04 6.44E-04

Salivary Glands 1.10E-04 1.30E-04 2.04E-04 3.29E-04 5.95E-04

Red Marrow 1.21E-04 1.19E-04 1.37E-04 1.72E-04 2.71E-04

Osteogenic Cells 1.85E-04 1.84E-04 1.98E-04 2.20E-04 2.76E-04

Spleen 1.40E-04 1.46E-04 2.26E-04 3.35E-04 5.99E-04

Thymus 1.87E-04 1.91E-04 2.79E-04 4.26E-04 7.31E-04

Thyroid 1.38E-04 1.62E-04 2.50E-04 3.87E-04 6.74E-04

Urinary Bladder Wall 1.27E-04 1.44E-04 2.05E-04 3.17E-04 5.54E-04

Uterus 1.40E-04 1.49E-04 2.32E-04 3.56E-04 6.22E-04

Total Body 1.25E-04 1.25E-04 1.92E-04 3.01E-04 5.39E-04

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.35E-04 1.53E-04 2.28E-04 3.50E-04 6.28E-04

Brain 9.43E-05 1.06E-04 1.74E-04 2.85E-04 4.95E-04

Breasts 1.02E-04 1.08E-04 ----- ----- -----

Esophagus 1.51E-04 1.83E-04 2.88E-04 4.54E-04 8.03E-04

Eyes 9.43E-05 1.06E-04 1.73E-04 2.85E-04 4.97E-04

Gallbladder Wall 1.34E-04 1.56E-04 2.45E-04 3.63E-04 5.18E-04

Left colon 1.32E-04 1.43E-04 2.24E-04 3.38E-04 6.06E-04

Small Intestine 1.25E-04 1.49E-04 2.27E-04 3.53E-04 6.23E-04

Stomach Wall 1.44E-04 1.65E-04 2.49E-04 3.77E-04 6.28E-04

Right colon 1.29E-04 1.46E-04 2.15E-04 3.48E-04 5.82E-04

Rectum 1.27E-04 1.37E-04 2.16E-04 3.28E-04 5.89E-04

Heart Wall 1.70E-04 1.95E-04 2.93E-04 4.28E-04 7.55E-04

Kidneys 1.19E-04 1.34E-04 2.03E-04 3.18E-04 5.68E-04

Liver 1.37E-04 1.56E-04 2.41E-04 3.57E-04 6.30E-04

Lungs 3.60E-04 4.43E-04 6.76E-04 1.06E-03 1.98E-03

Ovaries 1.42E-04 1.48E-04 2.23E-04 3.48E-04 6.24E-04

Pancreas 1.42E-04 1.61E-04 2.43E-04 3.76E-04 6.61E-04

Prostate 1.11E-04 1.43E-04 2.06E-04 3.19E-04 5.63E-04

Salivary Glands 1.05E-04 1.29E-04 2.03E-04 3.29E-04 5.95E-04

Red Marrow 1.11E-04 1.21E-04 1.59E-04 2.21E-04 3.81E-04

Osteogenic Cells 1.69E-04 1.84E-04 2.35E-04 3.14E-04 5.21E-04

Spleen 1.27E-04 1.45E-04 2.26E-04 3.36E-04 5.99E-04

Testes 8.75E-05 1.08E-04 1.62E-04 2.57E-04 4.63E-04

Thymus 1.61E-04 1.83E-04 2.68E-04 4.17E-04 7.23E-04

Thyroid 1.33E-04 1.63E-04 2.51E-04 3.96E-04 6.83E-04

Urinary Bladder Wall 1.19E-04 1.44E-04 2.05E-04 3.19E-04 5.58E-04

Uterus 1.40E-04 1.49E-04 2.32E-04 3.56E-04 6.22E-04

Total Body 1.12E-04 1.23E-04 1.91E-04 3.01E-04 5.39E-04

Effective Dose 1.43E-04 1.66E-04 2.40E-04 3.68E-04 6.55E-04

Radiation Dose Estimates (mSv/MBq) for 127Xe, Rebreathing for 5 min

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.75E-04 9.73E-04 1.47E-03 2.27E-03 4.12E-03

Brain 5.83E-04 7.29E-04 1.20E-03 1.97E-03 3.42E-03

Esophagus 7.01E-04 8.94E-04 1.42E-03 2.30E-03 4.20E-03

Eyes 5.83E-04 7.29E-04 1.20E-03 1.98E-03 3.46E-03

Gallbladder Wall 8.17E-04 1.04E-03 1.64E-03 2.43E-03 3.46E-03

Left colon 8.00E-04 9.58E-04 1.51E-03 2.29E-03 4.12E-03

Small Intestine 8.15E-04 1.02E-03 1.55E-03 2.42E-03 4.28E-03

Stomach Wall 7.53E-04 9.51E-04 1.46E-03 2.25E-03 3.79E-03

Right colon 7.91E-04 9.94E-04 1.47E-03 2.40E-03 4.00E-03

Rectum 7.97E-04 9.55E-04 1.51E-03 2.29E-03 4.12E-03

Heart Wall 7.59E-04 9.60E-04 1.49E-03 2.21E-03 3.96E-03

Kidneys 7.18E-04 8.96E-04 1.36E-03 2.14E-03 3.85E-03

Liver 7.32E-04 9.22E-04 1.45E-03 2.17E-03 3.90E-03

Lungs 7.62E-04 9.92E-04 1.53E-03 2.36E-03 4.41E-03

Pancreas 8.26E-04 1.03E-03 1.56E-03 2.43E-03 4.30E-03

Prostate 7.74E-04 1.00E-03 1.43E-03 2.22E-03 3.91E-03

Salivary Glands 6.83E-04 8.70E-04 1.38E-03 2.24E-03 4.07E-03

Red Marrow 6.08E-04 7.36E-04 1.13E-03 1.72E-03 3.15E-03

Osteogenic Cells 1.04E-03 1.29E-03 1.94E-03 2.94E-03 5.69E-03

Spleen 7.28E-04 9.16E-04 1.44E-03 2.16E-03 3.90E-03

Testes 6.12E-04 7.54E-04 1.13E-03 1.79E-03 3.23E-03

Thymus 6.89E-04 8.77E-04 1.33E-03 2.09E-03 3.76E-03

Thyroid 6.94E-04 8.86E-04 1.40E-03 2.27E-03 4.12E-03

Urinary Bladder Wall 7.74E-04 1.00E-03 1.43E-03 2.23E-03 3.91E-03

Total Body 6.54E-04 8.02E-04 1.25E-03 1.97E-03 3.55E-03

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 9.60E-04 9.85E-04 1.47E-03 2.26E-03 4.09E-03

Brain 7.24E-04 7.39E-04 1.20E-03 1.97E-03 3.42E-03

Breasts 6.17E-04 6.50E-04 ----- ----- -----

Esophagus 7.68E-04 9.11E-04 1.42E-03 2.29E-03 4.14E-03

Eyes 7.24E-04 7.39E-04 1.20E-03 1.97E-03 3.42E-03

Gallbladder Wall 9.69E-04 1.04E-03 1.64E-03 2.42E-03 3.43E-03

Left colon 9.80E-04 9.66E-04 1.51E-03 2.28E-03 4.10E-03

Small Intestine 8.99E-04 1.03E-03 1.55E-03 2.42E-03 4.26E-03

Stomach Wall 9.28E-04 9.58E-04 1.45E-03 2.23E-03 3.77E-03

Right colon 9.78E-04 1.00E-03 1.47E-03 2.39E-03 3.99E-03

Rectum 9.78E-04 9.64E-04 1.51E-03 2.28E-03 4.09E-03

Heart Wall 9.56E-04 9.83E-04 1.50E-03 2.21E-03 3.97E-03

Kidneys 8.84E-04 9.05E-04 1.36E-03 2.14E-03 3.84E-03

Liver 9.07E-04 9.33E-04 1.45E-03 2.17E-03 3.89E-03

Lungs 9.79E-04 1.07E-03 1.53E-03 2.35E-03 4.38E-03

Ovaries 9.90E-04 1.03E-03 1.55E-03 2.42E-03 4.34E-03

Pancreas 1.01E-03 1.04E-03 1.56E-03 2.43E-03 4.28E-03

Salivary Glands 7.45E-04 8.80E-04 1.38E-03 2.24E-03 4.05E-03

Red Marrow 7.25E-04 7.42E-04 8.49E-04 1.06E-03 1.63E-03

Osteogenic Cells 1.22E-03 1.28E-03 1.43E-03 1.62E-03 2.25E-03

Spleen 9.01E-04 9.27E-04 1.44E-03 2.16E-03 3.89E-03

Thymus 8.77E-04 9.01E-04 1.34E-03 2.09E-03 3.76E-03

Thyroid 7.58E-04 8.98E-04 1.40E-03 2.26E-03 4.09E-03

Urinary Bladder Wall 8.87E-04 1.01E-03 1.43E-03 2.22E-03 3.87E-03

Uterus 9.76E-04 1.04E-03 1.62E-03 2.48E-03 4.33E-03

Total Body 7.92E-04 8.13E-04 1.25E-03 1.97E-03 3.55E-03

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.68E-04 9.79E-04 1.47E-03 2.26E-03 4.11E-03

Brain 6.53E-04 7.34E-04 1.20E-03 1.97E-03 3.42E-03

Breasts 6.17E-04 6.50E-04 0.00E+00 0.00E+00 0.00E+00

Esophagus 7.34E-04 9.02E-04 1.42E-03 2.30E-03 4.17E-03

Eyes 6.53E-04 7.34E-04 1.20E-03 1.98E-03 3.44E-03

Gallbladder Wall 8.93E-04 1.04E-03 1.64E-03 2.43E-03 3.45E-03

Left colon 8.90E-04 9.62E-04 1.51E-03 2.29E-03 4.11E-03

Small Intestine 8.57E-04 1.02E-03 1.55E-03 2.42E-03 4.27E-03

Stomach Wall 8.41E-04 9.55E-04 1.46E-03 2.24E-03 3.78E-03

Right colon 8.84E-04 9.98E-04 1.47E-03 2.39E-03 4.00E-03

Rectum 8.88E-04 9.60E-04 1.51E-03 2.29E-03 4.10E-03

Heart Wall 8.57E-04 9.71E-04 1.49E-03 2.21E-03 3.97E-03

Kidneys 8.01E-04 9.00E-04 1.36E-03 2.14E-03 3.84E-03

Liver 8.19E-04 9.27E-04 1.45E-03 2.17E-03 3.90E-03

Lungs 8.71E-04 1.03E-03 1.53E-03 2.35E-03 4.39E-03

Ovaries 9.90E-04 1.03E-03 1.55E-03 2.42E-03 4.34E-03

Pancreas 9.18E-04 1.04E-03 1.56E-03 2.43E-03 4.29E-03

Prostate 7.74E-04 1.00E-03 1.43E-03 2.22E-03 3.91E-03

Salivary Glands 7.14E-04 8.75E-04 1.38E-03 2.24E-03 4.06E-03

Red Marrow 6.66E-04 7.39E-04 9.91E-04 1.39E-03 2.39E-03

Osteogenic Cells 1.13E-03 1.29E-03 1.68E-03 2.28E-03 3.97E-03

Spleen 8.14E-04 9.22E-04 1.44E-03 2.16E-03 3.90E-03

Testes 6.12E-04 7.54E-04 1.13E-03 1.79E-03 3.23E-03

Thymus 7.83E-04 8.89E-04 1.34E-03 2.09E-03 3.76E-03

Thyroid 7.26E-04 8.92E-04 1.40E-03 2.27E-03 4.11E-03

Urinary Bladder Wall 8.30E-04 1.00E-03 1.43E-03 2.22E-03 3.89E-03

Uterus 9.76E-04 1.04E-03 1.62E-03 2.48E-03 4.33E-03

Total Body 7.23E-04 8.07E-04 1.25E-03 1.97E-03 3.55E-03

Effective Dose 7.10E-04 8.11E-04 1.15E-03 1.77E-03 3.12E-03

Radiation Dose Estimates (mSv/MBq) for 127Xe, Rebreathing for 10 min

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.26E-03 1.59E-03 2.39E-03 3.70E-03 6.72E-03

Brain 9.57E-04 1.20E-03 1.97E-03 3.23E-03 5.62E-03

Esophagus 1.11E-03 1.41E-03 2.24E-03 3.65E-03 6.67E-03

Eyes 9.57E-04 1.20E-03 1.97E-03 3.25E-03 5.67E-03

Gallbladder Wall 1.33E-03 1.69E-03 2.68E-03 3.97E-03 5.65E-03

Left colon 1.31E-03 1.57E-03 2.48E-03 3.75E-03 6.74E-03

Small Intestine 1.34E-03 1.67E-03 2.55E-03 3.98E-03 7.02E-03

Stomach Wall 1.21E-03 1.53E-03 2.35E-03 3.62E-03 6.12E-03

Right colon 1.30E-03 1.63E-03 2.42E-03 3.93E-03 6.56E-03

Rectum 1.31E-03 1.57E-03 2.48E-03 3.77E-03 6.76E-03

Heart Wall 1.21E-03 1.53E-03 2.37E-03 3.52E-03 6.33E-03

Kidneys 1.17E-03 1.47E-03 2.23E-03 3.50E-03 6.30E-03

Liver 1.18E-03 1.49E-03 2.35E-03 3.52E-03 6.33E-03

Lungs 1.03E-03 1.35E-03 2.05E-03 3.14E-03 5.85E-03

Pancreas 1.34E-03 1.68E-03 2.54E-03 3.96E-03 7.00E-03

Prostate 1.27E-03 1.64E-03 2.35E-03 3.64E-03 6.42E-03

Salivary Glands 1.12E-03 1.43E-03 2.26E-03 3.68E-03 6.66E-03

Red Marrow 1.01E-03 1.22E-03 1.91E-03 2.95E-03 5.49E-03

Osteogenic Cells 1.61E-03 1.98E-03 3.00E-03 4.56E-03 8.70E-03

Spleen 1.18E-03 1.49E-03 2.35E-03 3.53E-03 6.36E-03

Testes 1.01E-03 1.24E-03 1.86E-03 2.95E-03 5.31E-03

Thymus 1.10E-03 1.39E-03 2.12E-03 3.32E-03 5.99E-03

Thyroid 1.11E-03 1.42E-03 2.25E-03 3.65E-03 6.67E-03

Urinary Bladder Wall 1.27E-03 1.64E-03 2.35E-03 3.66E-03 6.42E-03

Total Body 1.07E-03 1.31E-03 2.05E-03 3.22E-03 5.79E-03

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.56E-03 1.60E-03 2.39E-03 3.70E-03 6.69E-03

Brain 1.19E-03 1.21E-03 1.97E-03 3.23E-03 5.62E-03

Breasts 1.00E-03 1.05E-03 ----- ----- -----

Esophagus 1.21E-03 1.44E-03 2.24E-03 3.65E-03 6.61E-03

Eyes 1.19E-03 1.21E-03 1.97E-03 3.25E-03 5.62E-03

Gallbladder Wall 1.59E-03 1.71E-03 2.68E-03 3.97E-03 5.62E-03

Left colon 1.61E-03 1.58E-03 2.48E-03 3.75E-03 6.72E-03

Small Intestine 1.48E-03 1.68E-03 2.55E-03 3.98E-03 6.99E-03

Stomach Wall 1.50E-03 1.55E-03 2.36E-03 3.62E-03 6.11E-03

Right colon 1.60E-03 1.64E-03 2.42E-03 3.93E-03 6.56E-03

Rectum 1.61E-03 1.58E-03 2.48E-03 3.77E-03 6.72E-03

Heart Wall 1.51E-03 1.55E-03 2.37E-03 3.52E-03 6.32E-03

Kidneys 1.45E-03 1.48E-03 2.23E-03 3.50E-03 6.29E-03

Liver 1.47E-03 1.51E-03 2.35E-03 3.52E-03 6.32E-03

Lungs 1.34E-03 1.42E-03 2.05E-03 3.14E-03 5.82E-03

Ovaries 1.63E-03 1.70E-03 2.55E-03 3.96E-03 7.13E-03

Pancreas 1.65E-03 1.70E-03 2.54E-03 3.64E-03 7.00E-03

Salivary Glands 1.22E-03 1.44E-03 2.26E-03 3.68E-03 6.63E-03

Red Marrow 1.20E-03 1.24E-03 1.45E-03 2.95E-03 2.99E-03

Osteogenic Cells 1.93E-03 1.99E-03 2.15E-03 4.56E-03 3.05E-03

Spleen 1.47E-03 1.51E-03 2.35E-03 3.53E-03 6.35E-03

Thymus 1.38E-03 1.42E-03 2.12E-03 2.95E-03 5.97E-03

Thyroid 1.21E-03 1.44E-03 2.25E-03 3.32E-03 6.62E-03

Urinary Bladder Wall 1.46E-03 1.66E-03 2.35E-03 3.65E-03 6.35E-03

Uterus 1.60E-03 1.71E-03 2.65E-03 3.66E-03 7.12E-03

Total Body 1.29E-03 1.33E-03 2.05E-03 3.22E-03 5.79E-03

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.41E-03 1.60E-03 2.39E-03 3.69E-03 6.70E-03

Brain 1.07E-03 1.20E-03 1.97E-03 3.23E-03 5.62E-03

Breasts 1.00E-03 1.05E-03 0.00E+00 0.00E+00 0.00E+00

Esophagus 1.16E-03 1.43E-03 2.24E-03 3.64E-03 6.64E-03

Eyes 1.07E-03 1.20E-03 1.97E-03 3.24E-03 5.65E-03

Gallbladder Wall 1.46E-03 1.70E-03 2.68E-03 3.97E-03 5.63E-03

Left colon 1.46E-03 1.57E-03 2.48E-03 3.75E-03 6.73E-03

Small Intestine 1.41E-03 1.68E-03 2.55E-03 3.97E-03 7.01E-03

Stomach Wall 1.36E-03 1.54E-03 2.36E-03 3.62E-03 6.12E-03

Right colon 1.45E-03 1.64E-03 2.42E-03 3.93E-03 6.56E-03

Rectum 1.46E-03 1.58E-03 2.48E-03 3.76E-03 6.74E-03

Heart Wall 1.36E-03 1.54E-03 2.37E-03 3.52E-03 6.33E-03

Kidneys 1.31E-03 1.47E-03 2.23E-03 3.50E-03 6.29E-03

Liver 1.33E-03 1.50E-03 2.35E-03 3.52E-03 6.33E-03

Lungs 1.19E-03 1.39E-03 2.05E-03 3.13E-03 5.83E-03

Ovaries 1.63E-03 1.70E-03 2.55E-03 3.98E-03 7.13E-03

Pancreas 1.50E-03 1.69E-03 2.54E-03 3.96E-03 7.00E-03

Prostate 1.27E-03 1.64E-03 2.35E-03 3.64E-03 6.42E-03

Salivary Glands 1.17E-03 1.43E-03 2.26E-03 3.67E-03 6.65E-03

Red Marrow 1.11E-03 1.23E-03 1.68E-03 2.41E-03 4.24E-03

Osteogenic Cells 1.77E-03 1.99E-03 2.57E-03 3.48E-03 5.87E-03

Spleen 1.33E-03 1.50E-03 2.35E-03 3.52E-03 6.36E-03

Testes 1.01E-03 1.24E-03 1.86E-03 2.95E-03 5.31E-03

Thymus 1.24E-03 1.40E-03 2.12E-03 3.31E-03 5.98E-03

Thyroid 1.16E-03 1.43E-03 2.25E-03 3.65E-03 6.65E-03

Urinary Bladder Wall 1.36E-03 1.65E-03 2.35E-03 3.65E-03 6.39E-03

Uterus 1.60E-03 1.71E-03 2.65E-03 4.07E-03 7.12E-03

Total Body 1.18E-03 1.32E-03 2.05E-03 3.22E-03 5.79E-03

Effective Dose 1.13E-03 1.28E-03 1.82E-03 2.80E-03 4.95E-03

Radiation Dose Estimates (mSv/MBq) for 133Xe, Single Inhalation, 30 s Breath Hold

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.02E-04 1.34E-04 2.28E-04 3.79E-04 7.26E-04

Brain 9.80E-05 1.27E-04 2.19E-04 3.67E-04 6.89E-04

Esophagus 1.10E-04 1.44E-04 2.48E-04 4.14E-04 7.79E-04

Eyes 9.80E-05 1.27E-04 2.19E-04 3.67E-04 7.00E-04

Gallbladder Wall 1.03E-04 1.33E-04 2.28E-04 3.84E-04 6.99E-04

Left colon 1.03E-04 1.33E-04 2.27E-04 3.77E-04 7.20E-04

Small Intestine 1.03E-04 1.33E-04 2.28E-04 3.81E-04 7.20E-04

Stomach Wall 1.07E-04 1.41E-04 2.40E-04 3.94E-04 7.41E-04

Right colon 1.02E-04 1.33E-04 2.28E-04 3.79E-04 7.12E-04

Rectum 1.02E-04 1.32E-04 2.25E-04 3.78E-04 7.13E-04

Heart Wall 1.12E-04 1.45E-04 2.47E-04 4.05E-04 7.58E-04

Kidneys 9.96E-05 1.29E-04 2.23E-04 3.72E-04 7.01E-04

Liver 1.05E-04 1.36E-04 2.32E-04 3.85E-04 7.22E-04

Lungs 7.04E-04 9.39E-04 1.67E-03 2.76E-03 5.47E-03

Pancreas 1.05E-04 1.36E-04 2.32E-04 3.86E-04 7.30E-04

Prostate 1.01E-04 1.34E-04 2.24E-04 3.72E-04 7.25E-04

Salivary Glands 9.97E-05 1.29E-04 2.24E-04 3.78E-04 7.13E-04

Red Marrow 8.25E-05 1.06E-04 1.92E-04 3.52E-04 7.93E-04

Osteogenic Cells 9.61E-05 1.29E-04 2.10E-04 3.35E-04 6.68E-04

Spleen 1.02E-04 1.32E-04 2.27E-04 3.79E-04 7.13E-04

Testes 9.57E-05 1.24E-04 2.12E-04 3.56E-04 6.81E-04

Thymus 1.08E-04 1.42E-04 2.39E-04 4.03E-04 7.55E-04

Thyroid 1.06E-04 1.39E-04 2.39E-04 3.96E-04 7.37E-04

Urinary Bladder Wall 1.01E-04 1.34E-04 2.24E-04 3.75E-04 7.30E-04

Total Body 1.11E-04 1.43E-04 2.47E-04 4.12E-04 7.77E-04

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.27E-04 1.41E-04 2.29E-04 3.81E-04 7.18E-04

Brain 1.20E-04 1.33E-04 2.20E-04 3.67E-04 6.89E-04

Breasts 1.17E-04 1.31E-04 ----- ----- -----

Esophagus 1.32E-04 1.50E-04 2.47E-04 4.09E-04 7.62E-04

Eyes 1.20E-04 1.33E-04 2.20E-04 3.67E-04 6.89E-04

Gallbladder Wall 1.24E-04 1.38E-04 2.27E-04 3.81E-04 6.87E-04

Left colon 1.25E-04 1.39E-04 2.25E-04 3.74E-04 7.13E-04

Small Intestine 1.23E-04 1.39E-04 2.27E-04 3.78E-04 7.13E-04

Stomach Wall 1.28E-04 1.44E-04 2.35E-04 3.85E-04 7.27E-04

Right colon 1.24E-04 1.39E-04 2.27E-04 3.78E-04 7.08E-04

Rectum 1.24E-04 1.38E-04 2.25E-04 3.73E-04 7.10E-04

Heart Wall 1.39E-04 1.54E-04 2.48E-04 4.08E-04 7.65E-04

Kidneys 1.22E-04 1.35E-04 2.23E-04 3.71E-04 6.98E-04

Liver 1.28E-04 1.42E-04 2.32E-04 3.84E-04 7.20E-04

Lungs 8.89E-04 1.12E-03 1.67E-03 2.75E-03 5.46E-03

Ovaries 1.25E-04 1.39E-04 2.27E-04 3.79E-04 7.14E-04

Pancreas 1.27E-04 1.41E-04 2.31E-04 3.83E-04 7.20E-04

Salivary Glands 1.19E-04 1.35E-04 2.24E-04 3.74E-04 7.06E-04

Red Marrow 9.97E-05 1.10E-04 1.83E-04 3.32E-04 7.44E-04

Osteogenic Cells 1.14E-04 1.30E-04 1.76E-04 2.48E-04 4.45E-04

Spleen 1.25E-04 1.38E-04 2.27E-04 3.77E-04 7.10E-04

Thymus 1.40E-04 1.53E-04 2.47E-04 4.07E-04 7.58E-04

Thyroid 1.26E-04 1.44E-04 2.37E-04 3.91E-04 7.29E-04

Urinary Bladder Wall 1.23E-04 1.40E-04 2.24E-04 3.72E-04 7.18E-04

Uterus 1.24E-04 1.39E-04 2.27E-04 3.78E-04 7.13E-04

Total Body 1.37E-04 1.51E-04 2.47E-04 4.12E-04 7.77E-04

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.15E-04 1.37E-04 2.29E-04 3.80E-04 7.22E-04

Brain 1.09E-04 1.30E-04 2.19E-04 3.67E-04 6.89E-04

Breasts 1.17E-04 1.31E-04 ----- ----- -----

Esophagus 1.21E-04 1.47E-04 2.47E-04 4.11E-04 7.70E-04

Eyes 1.09E-04 1.30E-04 2.19E-04 3.67E-04 6.94E-04

Gallbladder Wall 1.14E-04 1.36E-04 2.28E-04 3.82E-04 6.93E-04

Left colon 1.14E-04 1.36E-04 2.26E-04 3.76E-04 7.16E-04

Small Intestine 1.13E-04 1.36E-04 2.28E-04 3.80E-04 7.17E-04

Stomach Wall 1.18E-04 1.43E-04 2.37E-04 3.89E-04 7.34E-04

Right colon 1.13E-04 1.36E-04 2.27E-04 3.78E-04 7.10E-04

Rectum 1.13E-04 1.35E-04 2.25E-04 3.75E-04 7.12E-04

Heart Wall 1.25E-04 1.50E-04 2.47E-04 4.06E-04 7.61E-04

Kidneys 1.11E-04 1.32E-04 2.23E-04 3.71E-04 7.00E-04

Liver 1.16E-04 1.39E-04 2.32E-04 3.84E-04 7.21E-04

Lungs 7.97E-04 1.03E-03 1.67E-03 2.76E-03 5.47E-03

Ovaries 1.25E-04 1.39E-04 2.27E-04 3.79E-04 7.14E-04

Pancreas 1.16E-04 1.38E-04 2.32E-04 3.84E-04 7.25E-04

Prostate 1.01E-04 1.34E-04 2.24E-04 3.72E-04 7.25E-04

Salivary Glands 1.09E-04 1.32E-04 2.24E-04 3.76E-04 7.09E-04

Red Marrow 9.11E-05 1.08E-04 1.87E-04 3.42E-04 7.68E-04

Osteogenic Cells 1.05E-04 1.29E-04 1.93E-04 2.91E-04 5.57E-04

Spleen 1.13E-04 1.35E-04 2.27E-04 3.78E-04 7.11E-04

Testes 9.57E-05 1.24E-04 2.12E-04 3.56E-04 6.81E-04

Thymus 1.24E-04 1.48E-04 2.43E-04 4.05E-04 7.57E-04

Thyroid 1.16E-04 1.41E-04 2.38E-04 3.93E-04 7.33E-04

Urinary Bladder Wall 1.12E-04 1.37E-04 2.24E-04 3.74E-04 7.24E-04

Uterus 1.24E-04 1.39E-04 2.27E-04 3.78E-04 7.13E-04

Total Body 1.24E-04 1.47E-04 2.47E-04 4.12E-04 7.77E-04

Effective Dose 1.85E-04 2.31E-04 3.66E-04 6.10E-04 1.20E-03

Radiation Dose Estimates (mSv/MBq) for 133Xe, Rebreathing for 5 min

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.04E-04 9.16E-04 1.57E-03 2.61E-03 5.00E-03

Brain 6.83E-04 8.84E-04 1.53E-03 2.56E-03 4.80E-03

Esophagus 6.98E-04 9.06E-04 1.57E-03 2.63E-03 5.00E-03

Eyes 6.83E-04 8.84E-04 1.53E-03 2.56E-03 4.88E-03

Gallbladder Wall 7.13E-04 9.17E-04 1.57E-03 2.65E-03 4.82E-03

Left colon 7.12E-04 9.20E-04 1.57E-03 2.61E-03 4.98E-03

Small Intestine 7.13E-04 9.23E-04 1.58E-03 2.65E-03 5.01E-03

Stomach Wall 7.01E-04 9.26E-04 1.58E-03 2.61E-03 4.95E-03

Right colon 7.06E-04 9.26E-04 1.58E-03 2.63E-03 4.94E-03

Rectum 7.11E-04 9.20E-04 1.57E-03 2.63E-03 4.97E-03

Heart Wall 7.06E-04 9.16E-04 1.57E-03 2.61E-03 4.91E-03

Kidneys 6.91E-04 8.96E-04 1.54E-03 2.58E-03 4.86E-03

Liver 6.99E-04 9.05E-04 1.56E-03 2.59E-03 4.89E-03

Lungs 9.91E-04 1.32E-03 2.32E-03 3.84E-03 7.59E-03

Pancreas 7.16E-04 9.26E-04 1.59E-03 2.64E-03 4.98E-03

Prostate 7.02E-04 9.34E-04 1.56E-03 2.59E-03 5.05E-03

Salivary Glands 6.93E-04 8.99E-04 1.56E-03 2.63E-03 4.95E-03

Red Marrow 5.58E-04 7.18E-04 1.32E-03 2.44E-03 5.51E-03

Osteogenic Cells 6.36E-04 8.65E-04 1.43E-03 2.30E-03 4.63E-03

Spleen 6.98E-04 9.03E-04 1.55E-03 2.60E-03 4.90E-03

Testes 6.68E-04 8.66E-04 1.48E-03 2.48E-03 4.75E-03

Thymus 6.90E-04 8.98E-04 1.54E-03 2.59E-03 4.88E-03

Thyroid 6.96E-04 9.04E-04 1.56E-03 2.61E-03 4.92E-03

Urinary Bladder Wall 7.02E-04 9.33E-04 1.56E-03 2.62E-03 5.09E-03

Total Body 7.05E-04 9.13E-04 1.57E-03 2.61E-03 4.94E-03

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 8.67E-04 9.59E-04 1.57E-03 2.61E-03 4.94E-03

Brain 8.35E-04 9.27E-04 1.53E-03 2.56E-03 4.80E-03

Breasts 7.93E-04 8.94E-04 ----- ----- -----

Esophagus 8.31E-04 9.50E-04 1.57E-03 2.62E-03 4.93E-03

Eyes 8.35E-04 9.27E-04 1.53E-03 2.56E-03 4.80E-03

Gallbladder Wall 8.59E-04 9.59E-04 1.57E-03 2.64E-03 4.77E-03

Left colon 8.68E-04 9.62E-04 1.57E-03 2.60E-03 4.95E-03

Small Intestine 8.57E-04 9.65E-04 1.58E-03 2.63E-03 4.96E-03

Stomach Wall 8.58E-04 9.68E-04 1.58E-03 2.60E-03 4.93E-03

Right colon 8.66E-04 9.68E-04 1.58E-03 2.63E-03 4.93E-03

Rectum 8.68E-04 9.62E-04 1.57E-03 2.60E-03 4.95E-03

Heart Wall 8.69E-04 9.62E-04 1.57E-03 2.61E-03 4.91E-03

Kidneys 8.47E-04 9.38E-04 1.54E-03 2.57E-03 4.85E-03

Liver 8.56E-04 9.48E-04 1.56E-03 2.59E-03 4.88E-03

Lungs 1.26E-03 1.56E-03 2.32E-03 3.82E-03 7.55E-03

Ovaries 8.68E-04 9.66E-04 1.59E-03 2.64E-03 4.98E-03

Pancreas 8.74E-04 9.68E-04 1.59E-03 2.63E-03 4.97E-03

Salivary Glands 8.25E-04 9.41E-04 1.56E-03 2.60E-03 4.90E-03

Red Marrow 6.75E-04 7.51E-04 1.26E-03 2.30E-03 5.17E-03

Osteogenic Cells 7.47E-04 8.72E-04 1.20E-03 1.70E-03 3.07E-03

Spleen 8.54E-04 9.46E-04 1.55E-03 2.58E-03 4.88E-03

Thymus 8.55E-04 9.47E-04 1.55E-03 2.57E-03 4.86E-03

Thyroid 8.28E-04 9.46E-04 1.56E-03 2.61E-03 4.92E-03

Urinary Bladder Wall 8.55E-04 9.76E-04 1.56E-03 2.59E-03 5.01E-03

Uterus 8.64E-04 9.66E-04 1.59E-03 2.64E-03 4.97E-03

Total Body 8.61E-04 9.57E-04 1.57E-03 2.61E-03 4.94E-03

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 7.85E-04 9.38E-04 1.57E-03 2.61E-03 4.97E-03

Brain 7.59E-04 9.05E-04 1.53E-03 2.56E-03 4.80E-03

Breasts 7.93E-04 8.94E-04 ----- ----- -----

Esophagus 7.65E-04 9.28E-04 1.57E-03 2.63E-03 4.97E-03

Eyes 7.59E-04 9.05E-04 1.53E-03 2.56E-03 4.84E-03

Gallbladder Wall 7.86E-04 9.38E-04 1.57E-03 2.64E-03 4.80E-03

Left colon 7.90E-04 9.41E-04 1.57E-03 2.61E-03 4.97E-03

Small Intestine 7.85E-04 9.44E-04 1.58E-03 2.64E-03 4.98E-03

Stomach Wall 7.80E-04 9.47E-04 1.58E-03 2.61E-03 4.94E-03

Right colon 7.86E-04 9.47E-04 1.58E-03 2.63E-03 4.94E-03

Rectum 7.90E-04 9.41E-04 1.57E-03 2.62E-03 4.96E-03

Heart Wall 7.88E-04 9.39E-04 1.57E-03 2.61E-03 4.91E-03

Kidneys 7.69E-04 9.17E-04 1.54E-03 2.57E-03 4.85E-03

Liver 7.78E-04 9.27E-04 1.56E-03 2.59E-03 4.88E-03

Lungs 1.13E-03 1.44E-03 2.32E-03 3.83E-03 7.57E-03

Ovaries 8.68E-04 9.66E-04 1.59E-03 2.64E-03 4.98E-03

Pancreas 7.95E-04 9.47E-04 1.59E-03 2.64E-03 4.98E-03

Prostate 7.02E-04 9.34E-04 1.56E-03 2.59E-03 5.05E-03

Salivary Glands 7.59E-04 9.20E-04 1.56E-03 2.61E-03 4.93E-03

Red Marrow 6.16E-04 7.35E-04 1.29E-03 2.37E-03 5.34E-03

Osteogenic Cells 6.91E-04 8.68E-04 1.31E-03 2.00E-03 3.85E-03

Spleen 7.76E-04 9.25E-04 1.55E-03 2.59E-03 4.89E-03

Testes 6.68E-04 8.66E-04 1.48E-03 2.48E-03 4.75E-03

Thymus 7.72E-04 9.23E-04 1.54E-03 2.58E-03 4.87E-03

Thyroid 7.62E-04 9.25E-04 1.56E-03 2.61E-03 4.92E-03

Urinary Bladder Wall 7.79E-04 9.55E-04 1.56E-03 2.61E-03 5.05E-03

Uterus 8.64E-04 9.66E-04 1.59E-03 2.64E-03 4.97E-03

Total Body 7.83E-04 9.35E-04 1.57E-03 2.61E-03 4.94E-03

Effective Dose 7.16E-04 8.68E-04 1.35E-03 2.27E-03 4.45E-03

Radiation Dose Estimates (mSv/MBq) for 133Xe, Rebreathing for 10 min

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.17E-03 1.52E-03 2.60E-03 4.33E-03 8.29E-03

Brain 1.13E-03 1.47E-03 2.54E-03 4.25E-03 7.97E-03

Esophagus 1.15E-03 1.49E-03 2.58E-03 4.33E-03 8.24E-03

Eyes 1.13E-03 1.47E-03 2.54E-03 4.25E-03 8.10E-03

Gallbladder Wall 1.18E-03 1.52E-03 2.61E-03 4.39E-03 8.00E-03

Left colon 1.18E-03 1.53E-03 2.60E-03 4.33E-03 8.26E-03

Small Intestine 1.18E-03 1.53E-03 2.63E-03 4.39E-03 8.31E-03

Stomach Wall 1.16E-03 1.53E-03 2.61E-03 4.32E-03 8.19E-03

Right colon 1.17E-03 1.54E-03 2.63E-03 4.37E-03 8.21E-03

Rectum 1.18E-03 1.53E-03 2.60E-03 4.37E-03 8.25E-03

Heart Wall 1.16E-03 1.51E-03 2.58E-03 4.30E-03 8.10E-03

Kidneys 1.15E-03 1.49E-03 2.56E-03 4.28E-03 8.06E-03

Liver 1.16E-03 1.50E-03 2.58E-03 4.29E-03 8.09E-03

Lungs 1.05E-03 1.41E-03 2.45E-03 4.05E-03 7.97E-03

Pancreas 1.19E-03 1.53E-03 2.63E-03 4.37E-03 8.26E-03

Prostate 1.17E-03 1.55E-03 2.60E-03 4.31E-03 8.39E-03

Salivary Glands 1.15E-03 1.49E-03 2.58E-03 4.36E-03 8.22E-03

Red Marrow 9.23E-04 1.19E-03 2.18E-03 4.04E-03 9.14E-03

Osteogenic Cells 1.05E-03 1.43E-03 2.37E-03 3.82E-03 7.68E-03

Spleen 1.16E-03 1.50E-03 2.58E-03 4.31E-03 8.13E-03

Testes 1.11E-03 1.44E-03 2.46E-03 4.12E-03 7.88E-03

Thymus 1.14E-03 1.48E-03 2.54E-03 4.26E-03 8.05E-03

Thyroid 1.15E-03 1.49E-03 2.58E-03 4.31E-03 8.14E-03

Urinary Bladder Wall 1.17E-03 1.55E-03 2.60E-03 4.35E-03 8.44E-03

Total Body 1.16E-03 1.50E-03 2.59E-03 4.30E-03 8.13E-03

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.44E-03 1.59E-03 2.60E-03 4.33E-03 8.19E-03

Brain 1.39E-03 1.54E-03 2.54E-03 4.25E-03 7.97E-03

Breasts 1.31E-03 1.48E-03 ----- ----- -----

Esophagus 1.37E-03 1.56E-03 2.58E-03 4.31E-03 8.13E-03

Eyes 1.39E-03 1.54E-03 2.54E-03 4.25E-03 7.97E-03

Gallbladder Wall 1.42E-03 1.59E-03 2.61E-03 4.39E-03 7.91E-03

Left colon 1.44E-03 1.60E-03 2.60E-03 4.32E-03 8.22E-03

Small Intestine 1.42E-03 1.60E-03 2.63E-03 4.37E-03 8.23E-03

Stomach Wall 1.42E-03 1.60E-03 2.61E-03 4.31E-03 8.16E-03

Right colon 1.44E-03 1.61E-03 2.63E-03 4.36E-03 8.18E-03

Rectum 1.44E-03 1.60E-03 2.60E-03 4.32E-03 8.22E-03

Heart Wall 1.43E-03 1.58E-03 2.58E-03 4.29E-03 8.09E-03

Kidneys 1.41E-03 1.56E-03 2.56E-03 4.26E-03 8.04E-03

Liver 1.42E-03 1.57E-03 2.58E-03 4.28E-03 8.08E-03

Lungs 1.34E-03 1.64E-03 2.45E-03 4.02E-03 7.91E-03

Ovaries 1.44E-03 1.60E-03 2.63E-03 4.38E-03 8.26E-03

Pancreas 1.45E-03 1.60E-03 2.63E-03 4.37E-03 8.24E-03

Salivary Glands 1.37E-03 1.56E-03 2.58E-03 4.31E-03 8.14E-03

Red Marrow 1.12E-03 1.24E-03 2.09E-03 3.82E-03 8.58E-03

Osteogenic Cells 1.23E-03 1.44E-03 1.98E-03 2.82E-03 5.09E-03

Spleen 1.42E-03 1.57E-03 2.58E-03 4.28E-03 8.09E-03

Thymus 1.40E-03 1.55E-03 2.54E-03 4.23E-03 8.00E-03

Thyroid 1.37E-03 1.56E-03 2.58E-03 4.31E-03 8.14E-03

Urinary Bladder Wall 1.42E-03 1.62E-03 2.60E-03 4.31E-03 8.31E-03

Uterus 1.43E-03 1.60E-03 2.63E-03 4.38E-03 8.25E-03

Total Body 1.42E-03 1.57E-03 2.59E-03 4.30E-03 8.13E-03

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.30E-03 1.55E-03 2.60E-03 4.33E-03 8.24E-03

Brain 1.26E-03 1.50E-03 2.54E-03 4.25E-03 7.97E-03

Breasts 1.31E-03 1.48E-03 ----- ----- -----

Esophagus 1.26E-03 1.53E-03 2.58E-03 4.32E-03 8.19E-03

Eyes 1.26E-03 1.50E-03 2.54E-03 4.25E-03 8.03E-03

Gallbladder Wall 1.30E-03 1.56E-03 2.61E-03 4.39E-03 7.96E-03

Left colon 1.31E-03 1.56E-03 2.60E-03 4.32E-03 8.24E-03

Small Intestine 1.30E-03 1.57E-03 2.63E-03 4.38E-03 8.27E-03

Stomach Wall 1.29E-03 1.57E-03 2.61E-03 4.31E-03 8.17E-03

Right colon 1.30E-03 1.57E-03 2.63E-03 4.37E-03 8.20E-03

Rectum 1.31E-03 1.56E-03 2.60E-03 4.34E-03 8.24E-03

Heart Wall 1.29E-03 1.54E-03 2.58E-03 4.29E-03 8.09E-03

Kidneys 1.28E-03 1.52E-03 2.56E-03 4.27E-03 8.05E-03

Liver 1.29E-03 1.53E-03 2.58E-03 4.29E-03 8.08E-03

Lungs 1.20E-03 1.52E-03 2.45E-03 4.03E-03 7.94E-03

Ovaries 1.44E-03 1.60E-03 2.63E-03 4.38E-03 8.26E-03

Pancreas 1.32E-03 1.57E-03 2.63E-03 4.37E-03 8.25E-03

Prostate 1.17E-03 1.55E-03 2.60E-03 4.31E-03 8.39E-03

Salivary Glands 1.26E-03 1.53E-03 2.58E-03 4.34E-03 8.18E-03

Red Marrow 1.02E-03 1.22E-03 2.14E-03 3.93E-03 8.86E-03

Osteogenic Cells 1.14E-03 1.44E-03 2.18E-03 3.32E-03 6.39E-03

Spleen 1.29E-03 1.53E-03 2.58E-03 4.30E-03 8.11E-03

Testes 1.11E-03 1.44E-03 2.46E-03 4.12E-03 7.88E-03

Thymus 1.27E-03 1.52E-03 2.54E-03 4.25E-03 8.02E-03

Thyroid 1.26E-03 1.53E-03 2.58E-03 4.31E-03 8.14E-03

Urinary Bladder Wall 1.29E-03 1.59E-03 2.60E-03 4.33E-03 8.38E-03

Uterus 1.43E-03 1.60E-03 2.63E-03 4.38E-03 8.25E-03

Total Body 1.29E-03 1.54E-03 2.59E-03 4.30E-03 8.13E-03

Effective Dose 1.10E-03 1.33E-03 2.07E-03 3.48E-03 6.80E-03

Radiation Dose Estimates (mSv/MBq) for 153Sm EDTMP

Biokinetic data: NUREG/CR-6345

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 9.87E-03 1.31E-02 2.00E-02 3.23E-02 6.82E-02

Brain 1.16E-02 1.39E-02 1.98E-02 3.04E-02 4.42E-02

Esophagus 6.97E-03 7.96E-03 1.13E-02 1.80E-02 2.99E-02

Eyes 1.16E-02 1.39E-02 1.98E-02 3.06E-02 4.46E-02

Gallbladder Wall 4.16E-03 5.49E-03 9.86E-03 1.45E-02 3.14E-02

Left colon 7.15E-03 9.39E-03 1.49E-02 2.33E-02 5.01E-02

Small Intestine 6.58E-03 8.45E-03 1.38E-02 2.20E-02 4.33E-02

Stomach Wall 3.93E-03 5.02E-03 8.59E-03 1.41E-02 3.08E-02

Right colon 5.16E-03 6.55E-03 1.08E-02 1.72E-02 3.54E-02

Rectum 1.24E-02 1.64E-02 2.75E-02 4.21E-02 8.00E-02

Heart Wall 5.33E-03 6.73E-03 1.07E-02 1.71E-02 3.34E-02

Kidneys 1.96E-02 2.49E-02 3.60E-02 5.90E-02 1.03E-01

Liver 5.45E-03 7.37E-03 1.13E-02 1.76E-02 3.46E-02

Lungs 8.09E-03 1.06E-02 1.74E-02 2.85E-02 5.91E-02

Pancreas 5.79E-03 7.40E-03 1.17E-02 1.93E-02 3.92E-02

Prostate 1.20E-02 1.54E-02 4.81E-02 3.49E-02 6.39E-02

Salivary Glands 6.93E-03 7.91E-03 1.12E-02 1.79E-02 2.94E-02

Red Marrow 6.79E-01 8.88E-01 1.88E+00 4.18E+00 1.13E+01

Osteogenic Cells 4.65E+00 6.05E+00 9.92E+00 1.68E+01 4.04E+01

Spleen 4.89E-03 6.57E-03 1.08E-02 2.02E-02 3.92E-02

Testes 4.88E-03 6.38E-03 1.26E-02 1.68E-02 3.35E-02

Thymus 4.83E-03 6.17E-03 9.68E-03 1.61E-02 3.10E-02

Thyroid 6.95E-03 7.93E-03 1.13E-02 1.78E-02 2.97E-02

Urinary Bladder Wall 9.92E-01 1.30E+00 2.01E+00 3.18E+00 6.21E+00

Total Body 1.07E-01 1.39E-01 2.40E-01 4.01E-01 7.57E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.27E-02 1.30E-02 1.96E-02 3.16E-02 6.73E-02

Brain 1.40E-02 1.40E-02 1.98E-02 3.04E-02 4.42E-02

Breasts 4.52E-03 4.57E-03 ----- ----- -----

Esophagus 8.16E-03 8.06E-03 1.14E-02 1.79E-02 2.94E-02

Eyes 1.40E-02 1.40E-02 1.98E-02 3.04E-02 4.42E-02

Gallbladder Wall 5.44E-03 5.77E-03 1.01E-02 1.48E-02 3.18E-02

Left colon 9.70E-03 1.05E-02 1.67E-02 2.65E-02 5.60E-02

Small Intestine 8.30E-03 8.71E-03 1.37E-02 2.18E-02 4.18E-02

Stomach Wall 5.46E-03 5.13E-03 8.60E-03 1.41E-02 3.07E-02

Right colon 6.36E-03 6.56E-03 1.08E-02 1.74E-02 3.58E-02

Rectum 2.31E-02 3.02E-02 4.08E-02 5.78E-02 1.02E-01

Heart Wall 6.70E-03 6.81E-03 1.07E-02 1.71E-02 3.33E-02

Kidneys 2.33E-02 2.57E-02 3.58E-02 5.88E-02 1.03E-01

Liver 7.20E-03 7.37E-03 1.13E-02 1.76E-02 3.46E-02

Lungs 1.03E-02 1.13E-02 1.74E-02 2.84E-02 5.87E-02

Ovaries 1.30E-02 1.59E-02 2.11E-02 3.62E-02 7.51E-02

Pancreas 7.41E-03 7.54E-03 1.18E-02 1.95E-02 3.94E-02

Salivary Glands 8.12E-03 8.00E-03 1.13E-02 1.78E-02 2.92E-02

Red Marrow 8.81E-01 9.57E-01 1.88E+00 4.18E+00 1.13E+01

Osteogenic Cells 4.66E+00 6.05E+00 9.92E+00 1.68E+01 4.04E+01

Spleen 6.60E-03 6.70E-03 1.08E-02 2.02E-02 3.92E-02

Thymus 6.07E-03 6.28E-03 9.71E-03 1.61E-02 3.09E-02

Thyroid 8.13E-03 8.01E-03 1.13E-02 1.78E-02 2.92E-02

Urinary Bladder Wall 1.29E+00 1.29E+00 1.99E+00 3.15E+00 6.16E+00

Uterus 2.03E-02 2.75E-02 4.40E-02 6.23E-02 1.02E-01

Total Body 1.31E-01 1.46E-01 2.40E-01 4.01E-01 7.56E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.13E-02 1.30E-02 1.98E-02 3.20E-02 6.78E-02

Brain 1.28E-02 1.40E-02 1.98E-02 3.04E-02 4.42E-02

Breasts 4.52E-03 4.57E-03 ----- ----- -----

Esophagus 7.57E-03 8.01E-03 1.13E-02 1.80E-02 2.97E-02

Eyes 1.28E-02 1.40E-02 1.98E-02 3.05E-02 4.44E-02

Gallbladder Wall 4.80E-03 5.63E-03 1.00E-02 1.47E-02 3.16E-02

Left colon 8.43E-03 9.93E-03 1.58E-02 2.49E-02 5.30E-02

Small Intestine 7.44E-03 8.58E-03 1.38E-02 2.19E-02 4.26E-02

Stomach Wall 4.69E-03 5.08E-03 8.60E-03 1.41E-02 3.07E-02

Right colon 5.76E-03 6.55E-03 1.08E-02 1.73E-02 3.56E-02

Rectum 1.77E-02 2.33E-02 3.41E-02 4.99E-02 9.10E-02

Heart Wall 6.01E-03 6.77E-03 1.07E-02 1.71E-02 3.33E-02

Kidneys 2.15E-02 2.53E-02 3.59E-02 5.89E-02 1.03E-01

Liver 6.33E-03 7.37E-03 1.13E-02 1.76E-02 3.46E-02

Lungs 9.22E-03 1.09E-02 1.74E-02 2.84E-02 5.89E-02

Ovaries 1.30E-02 1.59E-02 2.11E-02 3.62E-02 7.51E-02

Pancreas 6.60E-03 7.47E-03 1.17E-02 1.94E-02 3.93E-02

Prostate 1.20E-02 1.54E-02 4.81E-02 3.49E-02 6.39E-02

Salivary Glands 7.53E-03 7.95E-03 1.12E-02 1.78E-02 2.93E-02

Red Marrow 7.80E-01 9.23E-01 1.88E+00 4.18E+00 1.13E+01

Osteogenic Cells 4.65E+00 6.05E+00 9.92E+00 1.68E+01 4.04E+01

Spleen 5.75E-03 6.64E-03 1.08E-02 2.02E-02 3.92E-02

Testes 4.88E-03 6.38E-03 1.26E-02 1.68E-02 3.35E-02

Thymus 5.45E-03 6.23E-03 9.70E-03 1.61E-02 3.10E-02

Thyroid 7.54E-03 7.97E-03 1.13E-02 1.78E-02 2.94E-02

Urinary Bladder Wall 1.14E+00 1.29E+00 2.00E+00 3.17E+00 6.19E+00

Uterus 2.03E-02 2.75E-02 4.40E-02 6.23E-02 1.02E-01

Total Body 1.19E-01 1.43E-01 2.40E-01 4.01E-01 7.56E-01

Effective Dose 2.00E-01 2.40E-01 4.34E-01 8.50E-01 2.14E+00

Radiation Dose Estimates (mSv/MBq) for 201Tl

Biokinetic data: ICRP 128 recommended model

Physical models: RADAR ICRP 89 Reference Phantom Series

Effective doses: ICRP 103 weighting factors

Males

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.25E-01 1.55E-01 2.20E-01 3.19E-01 5.22E-01

Brain 3.62E-02 4.58E-02 7.65E-02 1.25E-01 2.25E-01

Esophagus 6.09E-02 7.96E-02 1.27E-01 1.95E-01 3.42E-01

Eyes 3.62E-02 4.58E-02 7.65E-02 1.25E-01 2.27E-01

Gallbladder Wall 9.96E-02 1.30E-01 2.03E-01 3.11E-01 4.59E-01

Left colon 1.34E+00 1.57E+00 2.62E+00 3.69E+00 4.45E+00

Small Intestine 2.27E-01 2.77E-01 4.08E-01 6.19E-01 8.71E-01

Stomach Wall 1.60E-01 2.06E-01 3.02E-01 2.96E-01 4.62E-01

Right colon 3.99E-01 4.55E-01 7.49E-01 1.06E+00 1.33E+00

Rectum 2.88E-01 3.61E-01 5.95E-01 8.48E-01 1.16E+00

Heart Wall 2.12E-01 2.92E-01 4.65E-01 7.39E-01 1.25E+00

Kidneys 5.52E-01 6.77E-01 9.24E-01 1.46E+00 2.26E+00

Liver 1.87E-01 2.51E-01 3.78E-01 5.32E-01 8.79E-01

Lungs 1.16E-01 1.52E-01 2.55E-01 4.06E-01 7.69E-01

Pancreas 1.04E-01 1.25E-01 1.78E-01 2.65E-01 4.31E-01

Prostate 5.51E-02 7.58E-02 1.34E-01 1.73E-01 3.19E-01

Salivary Glands 3.93E-02 5.03E-02 8.36E-02 1.36E-01 2.48E-01

Red Marrow 1.40E-01 1.62E-01 2.75E-01 5.08E-01 1.21E+00

Osteogenic Cells 4.12E-01 5.29E-01 8.55E-01 1.42E+00 3.31E+00

Spleen 1.67E-01 1.95E-01 2.99E-01 4.59E-01 7.65E-01

Testes 3.48E-02 4.43E-02 7.20E-02 3.91E+00 4.46E+00

Thymus 3.09E-01 2.44E-01 2.36E-01 1.68E-01 3.01E-01

Thyroid 2.53E-01 4.08E-01 6.16E-01 1.37E+00 2.52E+00

Urinary Bladder Wall 5.22E-02 7.33E-02 1.11E-01 1.70E-01 3.10E-01

Total Body 6.00E-02 7.52E-02 1.24E-01 2.02E-01 3.64E-01

Females

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.23E-01 1.30E-01 1.93E-01 2.78E-01 4.70E-01

Brain 4.47E-02 4.71E-02 7.65E-02 1.26E-01 2.26E-01

Breasts 4.30E-02 4.78E-02 ----- ----- -----

Esophagus 7.05E-02 8.18E-02 1.29E-01 1.94E-01 3.47E-01

Eyes 4.47E-02 4.71E-02 7.65E-02 1.25E-01 2.26E-01

Gallbladder Wall 1.21E-01 1.25E-01 1.89E-01 2.80E-01 4.12E-01

Left colon 1.45E+00 1.55E+00 2.59E+00 3.65E+00 4.40E+00

Small Intestine 2.51E-01 2.71E-01 4.00E-01 6.09E-01 8.61E-01

Stomach Wall 1.80E-01 2.03E-01 2.97E-01 2.91E-01 4.52E-01

Right colon 4.36E-01 4.49E-01 7.35E-01 1.04E+00 1.31E+00

Rectum 3.24E-01 3.59E-01 5.91E-01 8.39E-01 1.15E+00

Heart Wall 2.68E-01 2.99E-01 5.90E-01 7.26E-01 7.74E-01

Kidneys 6.19E-01 6.99E-01 9.23E-01 1.46E+00 2.26E+00

Liver 2.34E-01 2.47E-01 3.71E-01 5.24E-01 8.70E-01

Lungs 1.45E-01 1.73E-01 2.51E-01 4.01E-01 7.60E-01

Ovaries 7.60E-02 8.09E-02 1.26E-01 1.98E-01 3.41E-01

Pancreas 1.01E-01 1.08E-01 1.63E-01 2.45E-01 3.96E-01

Salivary Glands 4.36E-02 5.15E-02 8.36E-02 1.36E-01 2.47E-01

Red Marrow 1.80E-01 1.70E-01 2.62E-01 4.84E-01 1.15E+00

Osteogenic Cells 4.36E-01 5.30E-01 8.16E-01 1.33E+00 3.09E+00

Spleen 2.06E-01 2.06E-01 3.10E-01 4.75E-01 7.89E-01

Thymus 3.85E-01 2.74E-01 2.58E-01 1.64E-01 2.90E-01

Thyroid 2.94E-01 4.09E-01 6.16E-01 1.36E+00 2.53E+00

Urinary Bladder Wall 7.44E-02 8.40E-02 1.23E-01 1.84E-01 3.32E-01

Uterus 8.54E-02 9.30E-02 1.55E-01 2.31E-01 3.83E-01

Total Body 8.08E-02 7.81E-02 1.24E-01 2.01E-01 3.64E-01

Gender Average

Adult 15-yo 10-yo 5-yo 1-yo

Adrenals 1.17E-01 1.35E-01 1.96E-01 2.85E-01 4.74E-01

Brain 4.04E-02 4.65E-02 7.65E-02 1.25E-01 2.26E-01

Breasts 4.26E-02 4.75E-02 0.00E+00 0.00E+00 0.00E+00

Esophagus 6.45E-02 7.91E-02 1.25E-01 1.92E-01 3.39E-01

Eyes 4.04E-02 4.65E-02 7.65E-02 1.25E-01 2.26E-01

Gallbladder Wall 9.59E-02 1.12E-01 1.71E-01 2.59E-01 3.80E-01

Left colon 6.82E-01 8.16E-01 1.36E+00 1.92E+00 2.37E+00

Small Intestine 1.86E-01 2.18E-01 3.15E-01 4.89E-01 7.03E-01

Stomach Wall 1.62E-01 1.96E-01 2.88E-01 2.77E-01 4.33E-01

Right colon 2.27E-01 2.59E-01 4.22E-01 6.07E-01 8.05E-01

Rectum 1.67E-01 2.09E-01 3.42E-01 4.92E-01 7.06E-01

Heart Wall 2.38E-01 2.93E-01 5.25E-01 7.28E-01 1.01E+00

Kidneys 5.78E-01 6.80E-01 9.14E-01 1.45E+00 2.24E+00

Liver 2.07E-01 2.45E-01 3.68E-01 5.19E-01 8.60E-01

Lungs 1.29E-01 1.61E-01 2.52E-01 4.01E-01 7.60E-01

Ovaries 6.59E-02 7.15E-02 1.12E-01 1.76E-01 3.06E-01

Pancreas 8.88E-02 1.02E-01 1.53E-01 2.30E-01 3.79E-01

Prostate 4.92E-02 6.85E-02 1.12E-01 1.58E-01 2.96E-01

Salivary Glands 4.14E-02 5.09E-02 8.36E-02 1.36E-01 2.48E-01

Red Marrow 1.58E-01 1.64E-01 2.66E-01 4.94E-01 1.18E+00

Osteogenic Cells 4.20E-01 5.27E-01 8.33E-01 1.37E+00 3.20E+00

Spleen 1.78E-01 1.93E-01 2.96E-01 4.56E-01 7.60E-01

Testes 3.45E-02 4.38E-02 7.11E-02 3.91E+00 4.46E+00

Thymus 3.47E-01 2.58E-01 2.46E-01 1.64E-01 2.92E-01

Thyroid 2.74E-01 4.09E-01 6.16E-01 1.37E+00 2.52E+00

Urinary Bladder Wall 5.73E-02 7.19E-02 1.07E-01 1.63E-01 3.00E-01

Uterus 6.87E-02 7.66E-02 1.25E-01 1.90E-01 3.23E-01

Total Body 6.50E-02 7.20E-02 1.17E-01 1.90E-01 3.44E-01

Effective Dose 2.06E-01 2.46E-01 3.84E-01 6.52E-01 9.97E-01