

Use of Transportable Radiation Detection Instruments to Assess Internal Contamination from Intakes of Radionuclides

Part IV: Instructions for Users

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PREFACE

Part I of the present series (Anigstein, Erdman, and Ansari 2016) describes measurements of count rates from discrete radioactive sources of ^{60}Co , ^{137}Cs , and ^{241}Am on three instruments—the Ludlum Model 44-2 sodium iodide (NaI[Tl]) gamma scintillator, the Captus 3000 thyroid uptake probe, and the Transportable Portal Monitor Model TPM-903B. These measurements were performed to validate the computer models that had been constructed of these instruments, utilizing the radiation transport code MCNPX (LANL 2011).

Part II of the present series (Anigstein, Olsher, Loomis, and Ansari 2016) developed calibration factors to enable the use of transportable radiation detection instruments to assess intakes of radionuclides and subsequent doses. The study utilized biokinetic models to determine the retention of activity taken into the body and the distribution of such activity among different regions of the body as a function of time following exposure. Normalized count rates from activities of four radionuclides— ^{60}Co , ^{131}I , ^{137}Cs , and ^{192}Ir —in various anatomical regions of children of five ages and adult men and women were calculated using MCNPX. Cobalt-60, ^{137}Cs , and ^{192}Ir were among the "nine isotopes of interest for RDDs" listed by ANL (2007); ^{131}I could be a major constituent of radioactive releases following a nuclear reactor accident. Adult men and women were represented by voxel phantoms described by ICRP (2009), while children were represented by the revised ORNL phantom series described by Han et al. (2006). The Ludlum Model 44-2 gamma scintillator, the Captus 3000 thyroid uptake probe, and two models of the Model TPM-903B portal monitor were represented by models developed during the studies described in Part I of the present series. We also calculated exposure rates in air at several positions with respect to each of the child and adult phantoms to enable the use of other instruments, such as ionization chambers that are calibrated in terms of exposure rates, to perform screening assessments. These exposure geometries constitute a virtual instrument; thus, the analysis comprises the study of four instruments (the two models of the TPM-903B portal monitor—the standard model that has a 32-inch separation between the pillars and the extra-wide model used by the State of Georgia—are considered to be variants of the same instrument).

Part III of the present series (Anigstein and Olsher 2016) presents detailed tables of data that supplement Part II as well as the present document.

The results of the calculations developed during this study serve as input data to the ICAT (Internal Contamination Assessment Tool) computer code package, an interactive program that estimates intakes of radioactive material and the subsequent doses on the basis of measurements made with the various instruments (Anigstein et al. 2014).

The present report distills the results of the previous studies into a form that is usable by radiation professionals responding to a radiological emergency.² Chapter 1 provides detailed directions for using transportable radiation detection instruments to determine the intakes and

² In the present report, "radiation professional" refers to an individual who has a basic understanding of radiation measurements and has been trained in the proper use of radiation detection instruments. This individual can be a health physicist, a medical physicist, a radiological technologist, a nuclear medicine technologist, a nurse, or another professional with training in radiation detection.

subsequent doses from four radionuclides. Chapter 2 describes the use of the ICAT computer code package, which utilizes the calculations described in Part II to enable the user to compute the intake activity and subsequent doses to an internally contaminated individual. Chapter 3 presents a technical description of the ICAT program. Appendices A and B contain tables of calibration factors and dose coefficients, respectively, that allow users to calculate intakes and doses if the ICAT code is not available.

The authors gratefully acknowledge the support and assistance of a number of individuals and organizations without whom this work would not have been possible. First and foremost is the Penn State Milton S. Hershey Medical Center, which provided access to its facilities. Richard Olsher, HP Consulting, LLC, provided support for the MCNPX simulations. Keith Eckerman of the Oak Ridge National Laboratory provided advice and information on the use of the DCAL software system and reviewed a predecessor of the present report, making thoughtful comments and recommendations. Wesley Bolch, Professor of Radiological and Biomedical Engineering at the University of Florida, provided the MCNP models of the revised ORNL phantom series. Julie Timins, former Attending Radiologist, Christ Hospital, Jersey City, New Jersey, reviewed a predecessor to these instructions and made thoughtful comments and recommendations.

Several commercial firms provided valuable support and assistance.

Ludlum Measurements, Inc., provided engineering drawings and detailed technical information on the Ludlum Model 44-2 gamma scintillator and provided an instrument for use in our study.

Capintec, Inc., provided support for the study of the Captus 3000 Thyroid Uptake System, including the loan of a demonstration unit. Mary Anne Dell-Yusko, Vice President, Manufacturing, furnished engineering drawings and other technical information, and arranged the loan of the demonstration unit and technical support during our study. Technical support was provided by Capintec technical support specialists Kevin Page, Art Hall, and Kathy Thomas. Our special thanks go to Ms Thomas, who guided us through the step-by-step process of setting up this instrument.

Timothy Gregoire, Radiation Systems Engineer, Rapiscan Systems, Inc., provided detailed technical information on the Model TPM-903B portal monitor. Thermo Fisher Scientific Inc. provided both material and technical support for our study of this instrument, including the loan of a demonstration unit. The loan was arranged by Richard P. Oxford, Senior Group Product Manager, Contamination & Portals, who also provided technical information.

DISCLAIMER

These instructions and the corresponding software, the ICAT (Internal Contamination Assessment Tool) computer code package (Anigstein et al. 2014), are based on information obtained from published source documents and calculational models, which are referenced throughout. Reasonable efforts have been made to present accurate and reliable information. The user, however, assumes responsibility for the consequences of using this information. Neither the authors, nor the Centers for Disease Control and Prevention, nor any of their employees, make any warranty, express or implied, or assume any legal responsibility for the accuracy or completeness of the information and instructions contained in this document and the ICAT software. Use of specific trade names and commercial sources of instruments does not constitute an endorsement by the authors or by the Centers for Disease Control and Prevention.

Chapter 1

INSTRUCTIONS TO USERS

1.1 Introduction

The purpose of this set of instructions is to enable a radiation professional to assess the activity of a known radionuclide taken in by an individual at a known time after intake and the consequent dose to that individual. These procedures apply under the following conditions:

- There is a single radionuclide that has been identified
- The duration of the intake was brief compared to the elapsed time since the intake
- The time when the intake occurred is known

Procedures have been developed for the assessment of four radionuclides: ^{60}Co , ^{131}I , ^{137}Cs , and ^{192}Ir . Procedures have been developed to use count rates measured on three physical instruments—the Ludlum Model 44-2 sodium iodide (NaI[Tl]) gamma scintillator, the Captus 3000 thyroid uptake probe, and the Transportable Portal Monitor Model TPM-903B—which are illustrated in Figures 1–3. Procedures have also been developed to use exposure rates measured on a generic instrument, such as an ionization chamber, that is calibrated in exposure rates (e.g., in units of $\mu\text{R/h}$).



Figure 1. Ludlum Model 44-2 Gamma Scintillator and Model 16 Ratemeter (Ludlum 2010, 2011)



Figure 2. Captus 3000 Portable Thyroid Uptake System (Capintec 2012)

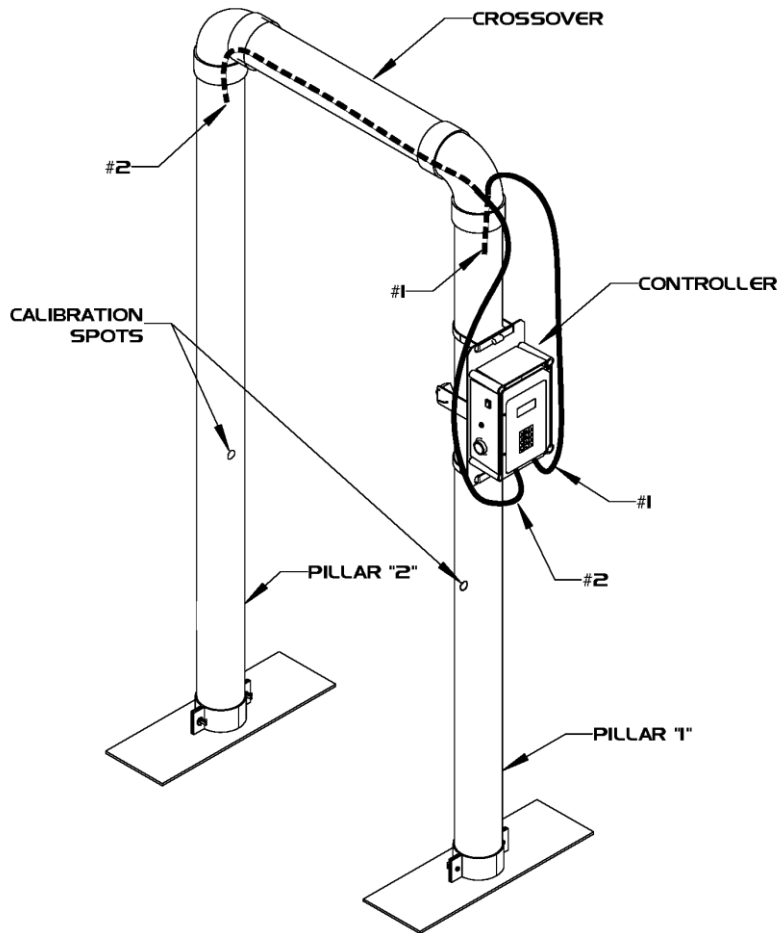


Figure 3. Schematic Diagram of TPM-903B Portal Monitor (TSA 2006)

The remainder of this chapter is addressed to the radiation professional assessing internal contamination following intakes by inhalation or ingestion. The individuals who are to be screened for internal contamination are referred to as clients.

1.2 Preliminary Steps

1.2.1 Selecting Screening Location

Clients should be screened in an area with a low level of ambient background radiation so as to minimize interference from sources of radiation external to the client. Use a survey meter containing an ionization chamber to check the background. If one is not available, another type of survey meter, such as a compensated G-M (Geiger-Müller) counter, may be used. Remove any radioactive source found in the area.

1.2.2 Preparing the Client

Before admitting a client to the screening area, make certain he or she has undergone a thorough external decontamination. This may require a complete change of clothing and showering or

other forms of decontamination of the entire body, including the hair. Do not allow anyone into the screening area who is not free of external radioactive contamination.

1.2.3 Preparing the Instruments

As the first step in setting up the instruments, cover the detectors to protect them from contamination. You can use plastic sheeting, plastic bags, or any thin, lightweight materials. For instruments attached to rate meters, such as the Ludlum Model 44-2 gamma scintillator, set the rate meter to the *S* (slow) position, if available. If using the Captus 3000 Thyroid Uptake System or the TPM-903B portal monitor, set up energy windows as described below.

Energy Windows

The Ludlum Model 44-2 gamma scintillator is normally used with a rate meter that has no provisions for adjusting the energy discriminator. However, it is possible to attach it to a control unit equipped with a single- or multichannel analyzer. The Captus 3000 Thyroid Uptake System and the TPM-903B portal monitor allow the user to specify upper and lower energy limits. Instruments that measure exposure rates, including survey meters containing ionization chambers or energy-compensated G-M counters, do not have provisions for energy discrimination.

If you are using an instrument other than an exposure rate meter and intend to assess intakes using the calibration factors listed in Appendix A, you must set the energy windows as described below. If you plan to use the ICAT (Internal Contamination Assessment Tool) computer code package (Anigstein et al. 2014) to interpret the readings taken with these instruments, you can select other energy windows. Such custom energy windows should only be employed by users who are familiar with the operation of these instruments and with the practical aspects of external radiation measurements. The following discussion assumes that the assessments will be performed either by using the tabulated calibration factors, or by using ICAT and the default energy windows supplied with the code.

The assumed energy limits for the Ludlum Model 44-2 are listed in Table 1. If the instrument is used with a simple rate meter or a scaler that has no provisions for setting energy discriminators, nothing more needs to be done in this respect. If it is used with an analyzer, you must set the upper and lower discriminators as listed in the table to obtain count rates that correspond to the tabulated calibration factors.

Table 1. Energy Windows

Radionuclide:	LLD	ULD			
	All	Co-60	I-131	Cs-137	Ir-192
Ludlum 44-2 (keV)	1	1,400	770	700	1,460
Captus 3000 (keV)	10	1,400	770	700	1,460
TPM-903B ^a (V)	0.068 0.098	5.04			

^a See text

Table 1 also lists the energy windows for the Captus 3000. The lowest recommended energy threshold for the Captus 3000 is 10 keV. This value is used as the lower energy threshold in the calibration factors for this instrument for all radionuclides that are listed in Table 1; the lower-level discriminator (LLD) must therefore be set at this value. The upper-level discriminator (ULD) must be set to the level listed in Table 1 for the radionuclide in question. Note that the values of the *Start* and *End Channels* displayed by this instrument are not the same as the lower and upper energies in keV.

The third instrument listed in Table 1 is the TPM-903B portal monitor. The factory setting of the LLD on early models of the TPM-903B was 0.098 V, which corresponds to a photon energy of 32.34 keV, assuming a nominal ratio of 330 keV per volt. The LLD on current models is set to 0.068 V, which corresponds to 22.44 keV. Calibration factors corresponding to each of these two LLD values are listed in Tables A-15 to A-20—either LLD setting can therefore be used on this instrument. The ULD on both the earlier and later models is set at the factory at 5.04 V, which corresponds to 1,660 keV. The calibration factors are based on this value, which must therefore be set on this instrument. Further information on setting the LLD and ULD can be found in the TPM-903B “Operations & Service Manual” (Rapiscan 2013).

1.2.4 Measuring Background

If you are using a Ludlum Model 44-2 or another survey meter, allow the instrument to stabilize for about 1 min, then read and record the count or exposure rate. If you are using an analog rate meter, set it to the lowest scale that doesn't cause the pointer to go off scale. If using the Captus 3000, first set the energy window as described above, then set the instrument for a 2 min count and record the counts. If using the TPM-903B, be certain it is set for a 20 s or longer background count—a longer count time (if available) will permit more precise assessments. Collect the background for at least as long as the preset counting time on this instrument.

If the background measured on any instrument is unusually high, check for any stray sources of radiation in the area. Enter the background and the energy window (if applicable) in the client record. Repeat the background measurement periodically between clients. The frequency of the background measurements should be governed by the variability of the background, to make sure that a fluctuating background does not affect the accuracy of measurements on clients. Check for radiation sources, including contaminated individuals in the vicinity of the screening area, if the background increases significantly.

1.2.5 Positioning the Instrument and the Client

The calibration factors used to assess internal contamination that are cited in the present report were calculated from computer simulations in which computer models of the real instruments and representations of children of several ages and adults of both sexes were placed in positions that would be used for screening assessments. It is therefore important to place the instrument and the client in the same relative position as was used in the computer simulation; otherwise, the calibration factors will not produce a valid estimate of the activity taken in by the contaminated individual.

Figures 4–19 show a sampling of cross-sectional views in the midsagittal planes of children of various ages and of adults of both sexes, and their positions with respect to the instruments. These figures were created by the computer code used to generate the calibration factors for the instruments described in these instructions. The models of children shown in Figures 4–14 are stylized geometrical forms. The models of adults shown in Figures 15–19 are based on the Reference Male and Reference Female Computational Phantoms (RMCP and RFCP) described by ICRP (2009). These models were created from MRI images of an adult male and an adult female. The height and mass³ of each model were scaled to the height and mass of the respective reference adult listed in Table 2. Since the midsagittal plane passes between the legs of each phantom, only a small portion of one leg of the RMCP is intersected by the plane and appears in the illustrations. A similar situation is observed in the RFCP. In addition, the female breasts do not appear in this medial view of the RFCP.

Table 2. Height and Mass of Reference Individual

Age (sex)	Height		Mass	
	cm	in	kg	lb
Newborn	51	20	3.5	7.7
1 y	76	30	10	22
5 y	109	43	19	42
10 y	138	54	32	71
15 y	167	66	56	123
Adult male	176	69	73	161
Adult female	163	64	60	132

Source: ICRP 2002, Table 2.9

The scales on the left-hand side and the bottom of each figure are in centimeters. The position of the zero on each scale indicates the center of the graphic image and has no other significance; however, the scales correctly depict the dimensions of the instruments and the human figures. In the illustrations of the Ludlum and Captus probes, only the positions of the instruments closest to the body are shown—the other positions can be visualized by moving the image of the instrument away from the body in a horizontal direction. You should use the diagrams in Figures 4–19 to position the instruments relative to the clients.

The positions of the Ludlum 44-2 and the Captus 3000 probes depend on the radionuclide and the mode of intake. For radionuclides other than ¹³¹I, if the intake is primarily by inhalation (as would be the case if the activity from the radiological event was airborne), the probe must be positioned opposite the front or back of the chest, in line with the center of mass of the lungs, as shown in Figures 4, 7, 11, 14, and 18. If the intake is primarily from ingestion of contaminated food or drink, the probe must be positioned opposite the front or back of the abdomen, in line with the center of mass of the stomach, as shown in Figures 6, 9, 13, and 17. In both sets of figures, the probe is shown in both the anterior and posterior positions. During the actual assessment, a single probe would be placed in one of these two positions. If the individual

³ The terms “mass” and “weight” are often used interchangeably when referring to the human body. In the present instructions, “mass” is used when referring to the computational models, “weight” when referring to clients.

inhaled or ingested ^{131}I , the probe may be placed opposite the chest or the stomach, depending on the mode of intake, as for the other radionuclides. It may be optionally positioned in front of the thyroid, as shown in Figures 5, 8, 12, 16, and 19. In each case the probe should be placed in contact with the body; if this is not practical, or if the count rate is so high as to saturate the instrument, the probe may be placed in a parallel location 1 ft (30.5 cm) away from the body.

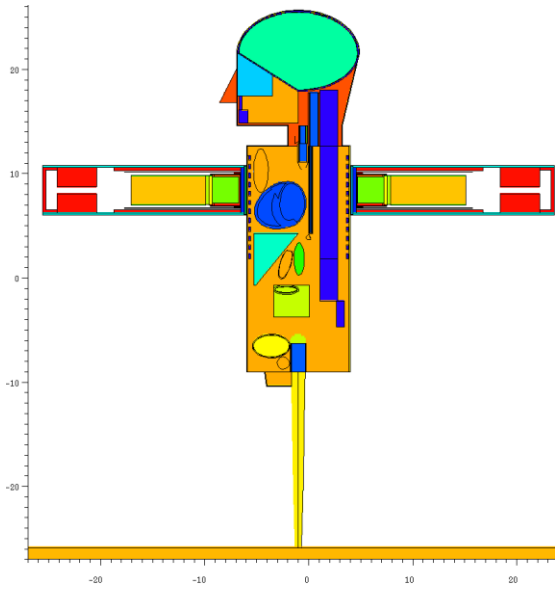


Figure 4. Infant–Ludlum 44-2 at Chest

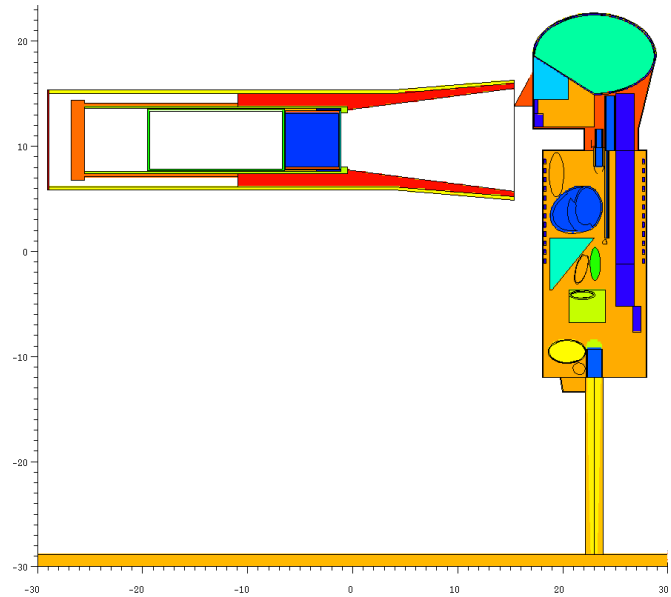


Figure 5. Infant–Captus 3000 at Thyroid

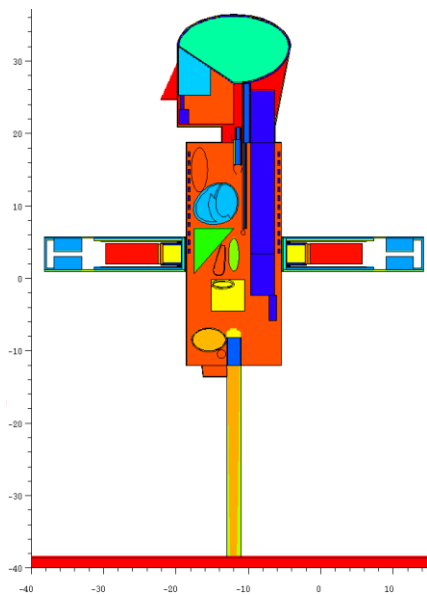


Figure 6. 1-y-old–Ludlum 44-2 at Abdomen

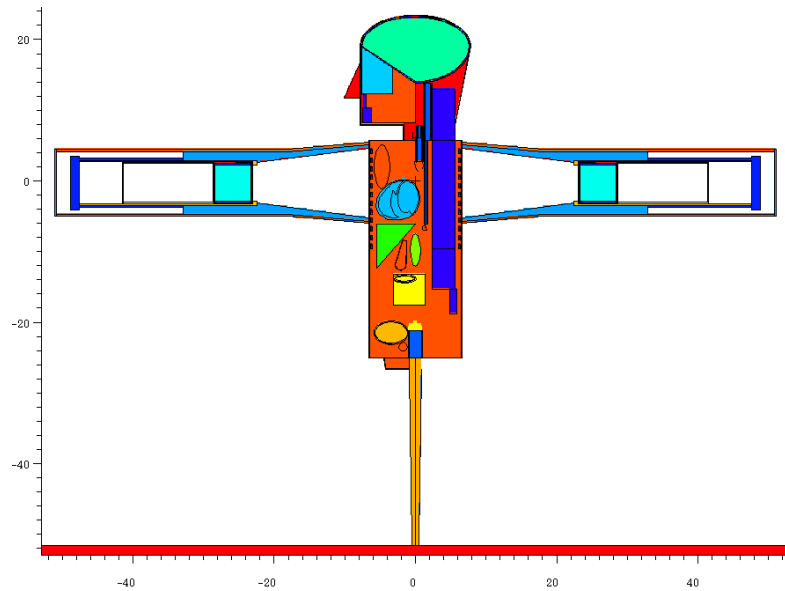


Figure 7. 1-y-old–Captus 3000 at Chest

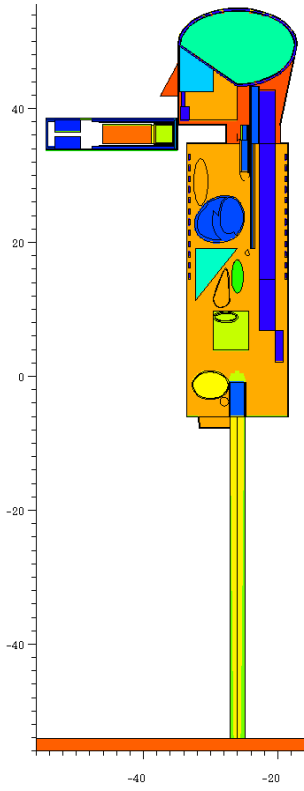


Figure 8. 5-y-old Ludlum 44-2 at Thyroid

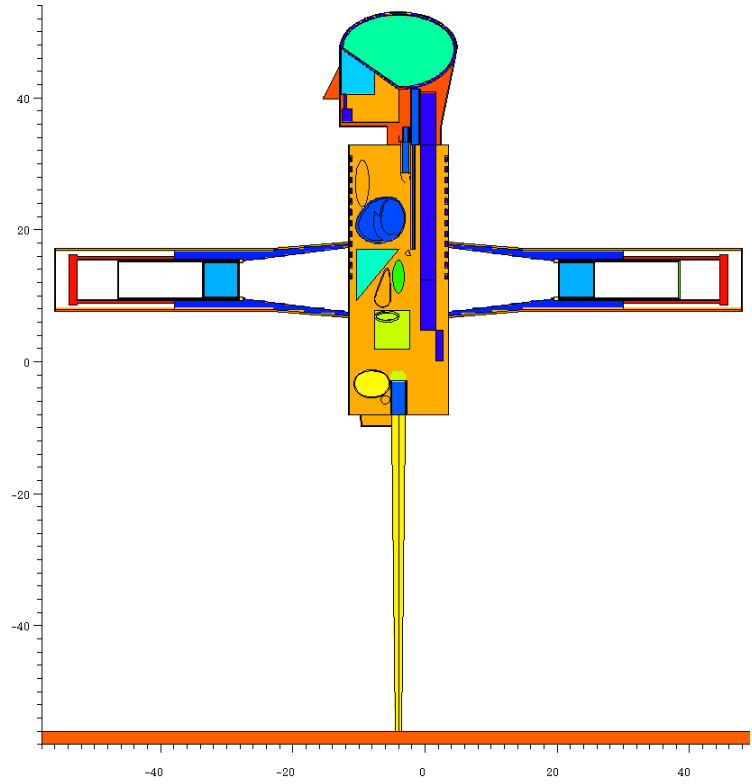


Figure 9. 5-y-old-Captus 3000 at Abdomen

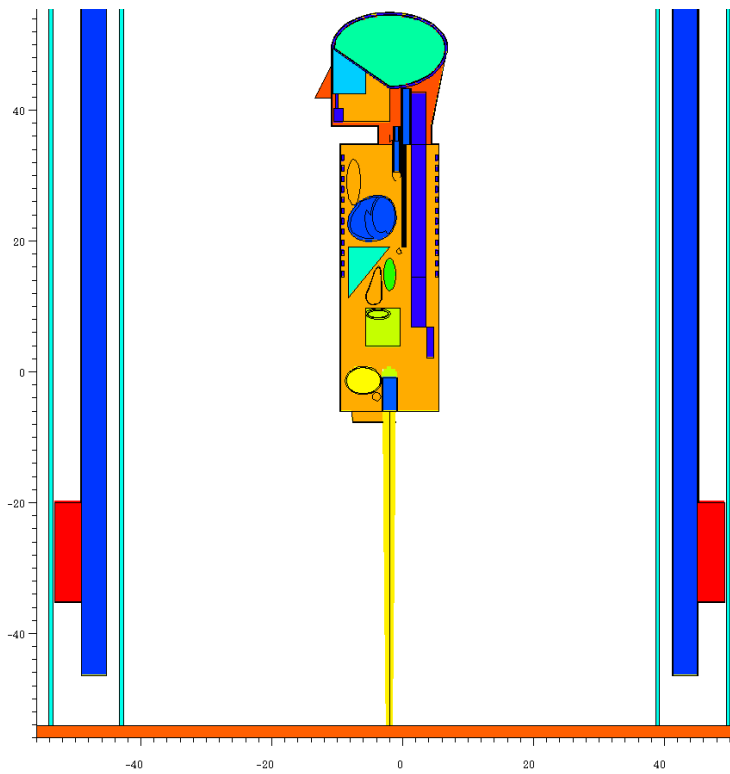


Figure 10. 5-y-old-TPM-903B (Standard Width)

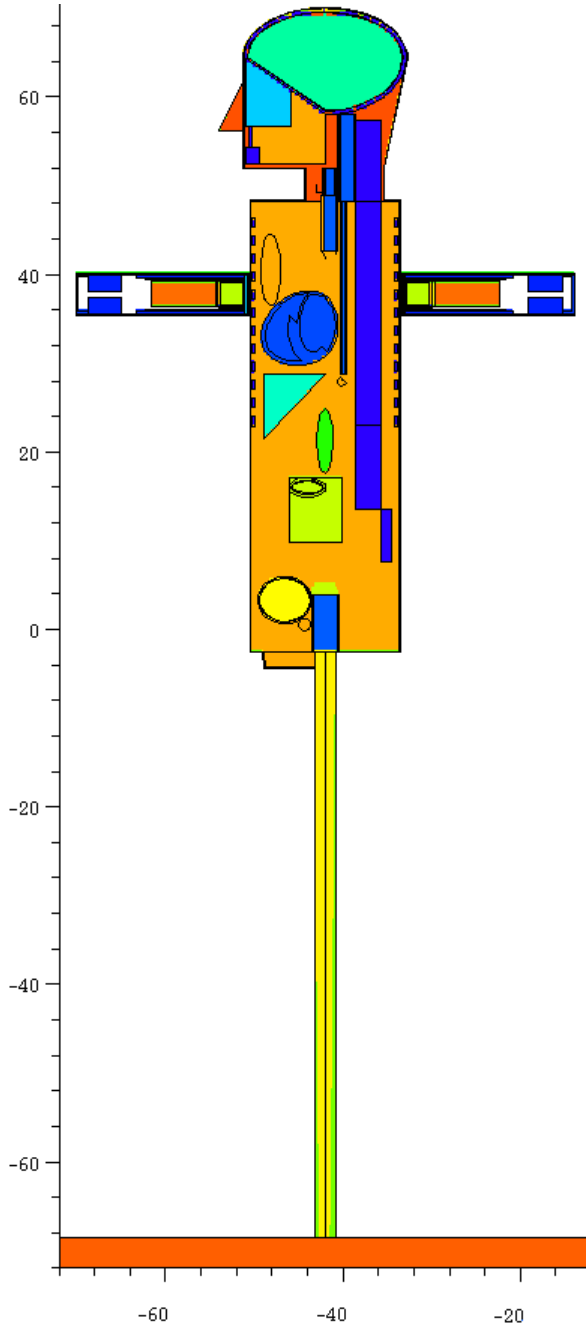


Figure 11. 10-y-old-Ludlum 44-2 at Chest

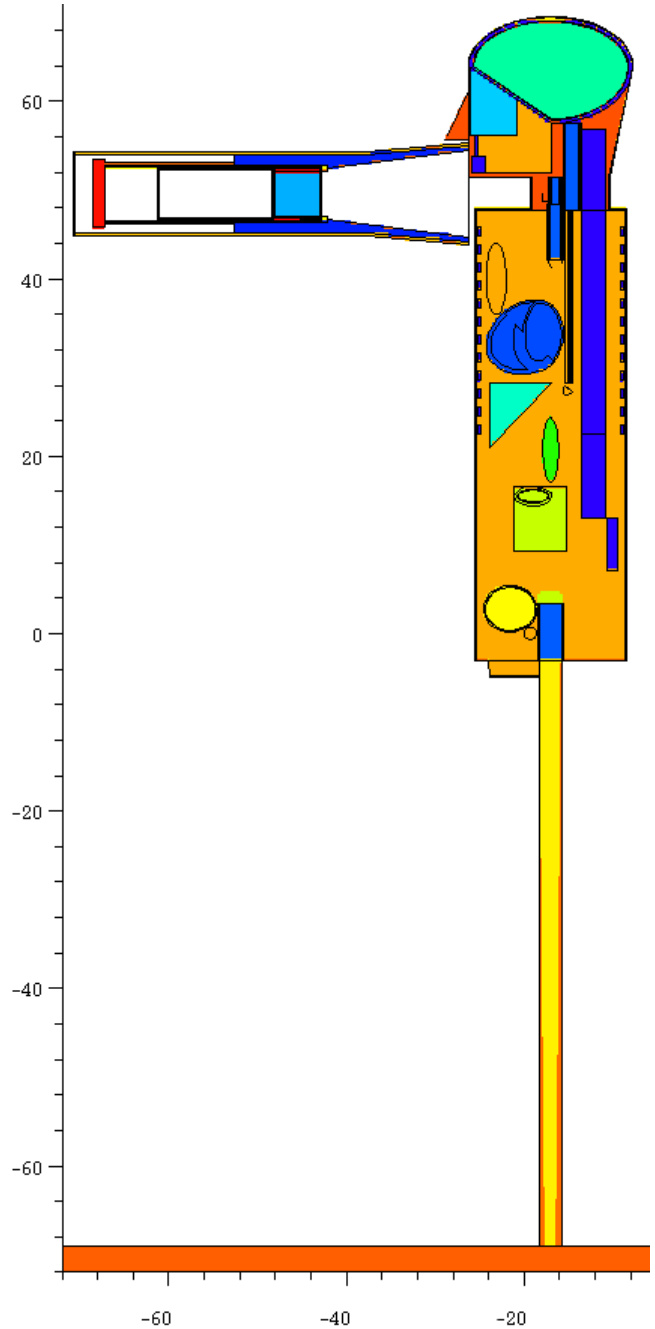


Figure 12. 10-y-old-Captus 3000 at Thyroid

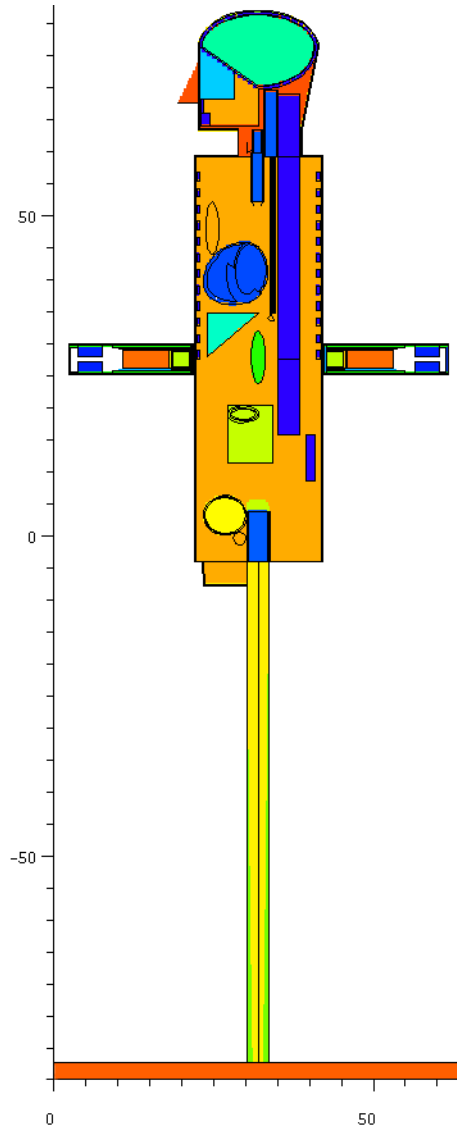


Figure 13. 15-y-old
Ludlum 44-2 at Abdomen

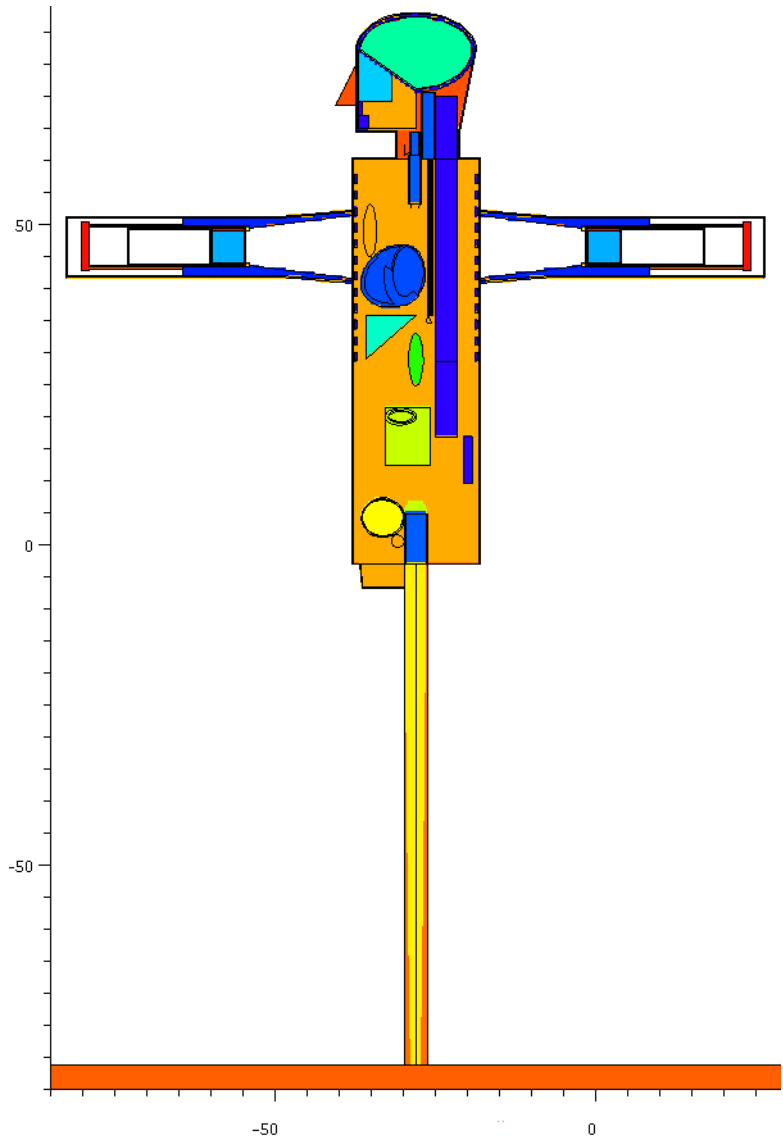


Figure 14. 15-y-old-Captus 3000 at Chest

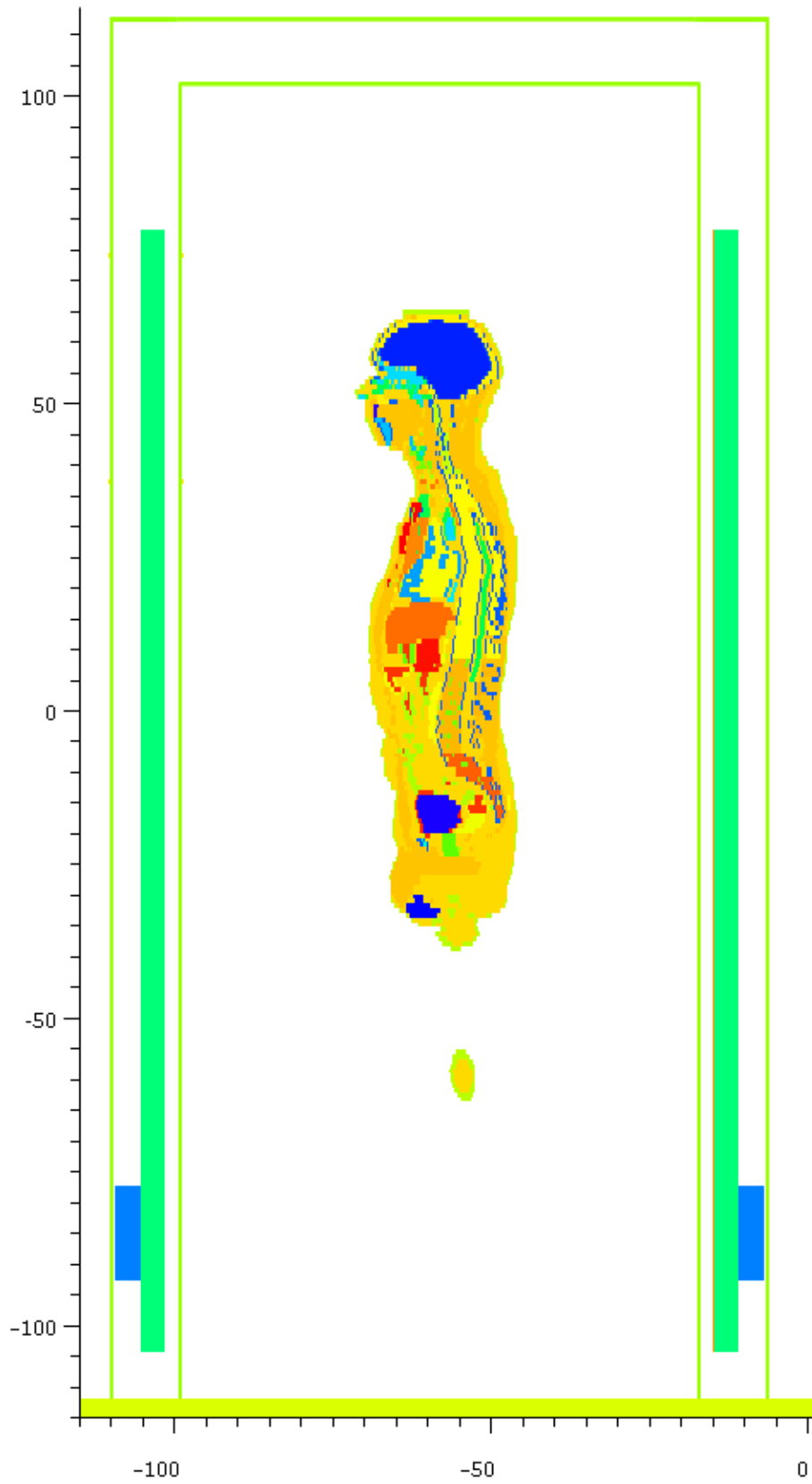


Figure 15. RMCP-TPM-903B (Standard Width)

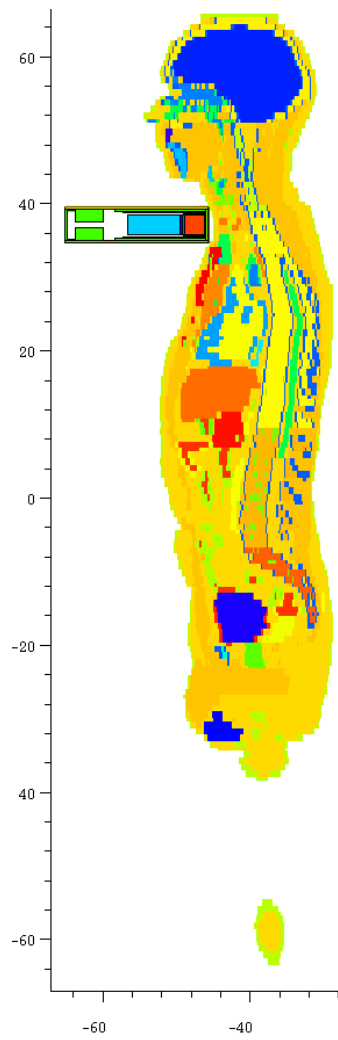


Figure 16. RMCP
Ludlum 44-2 at Thyroid

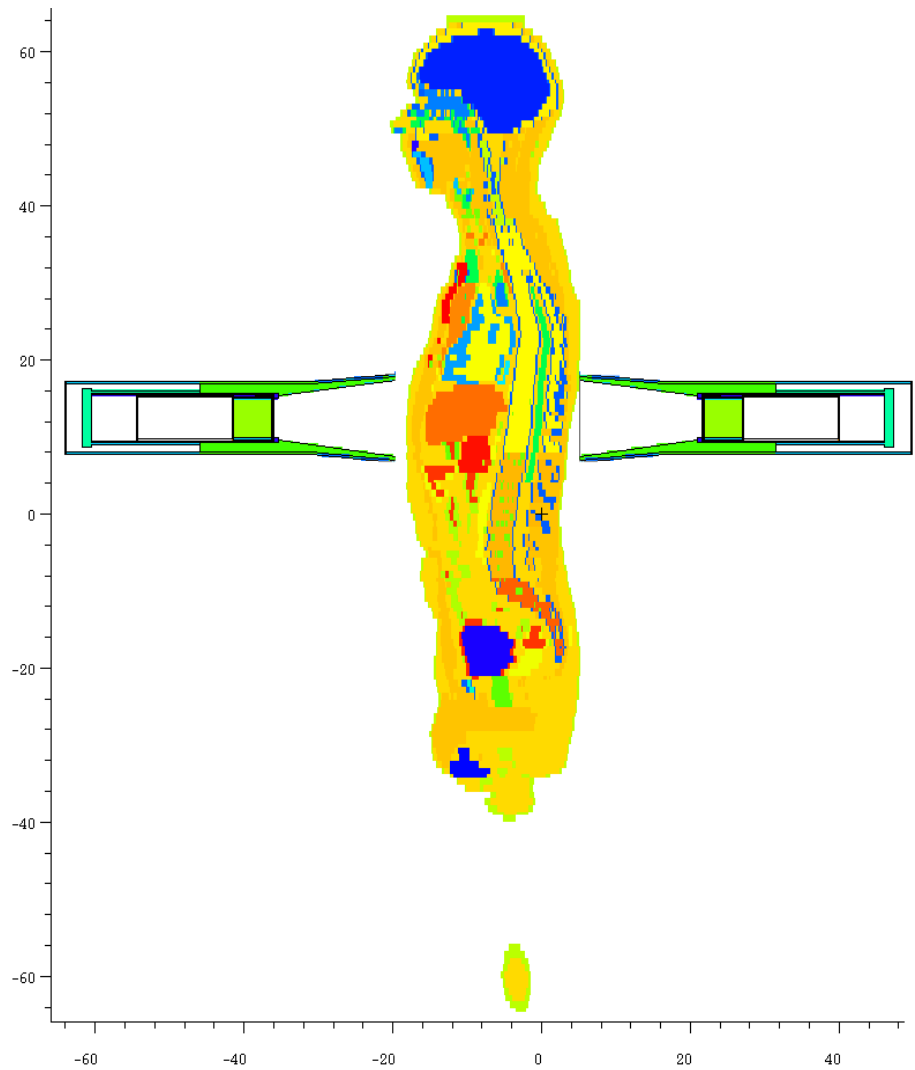


Figure 17. RMCP-Captus 3000 at Abdomen

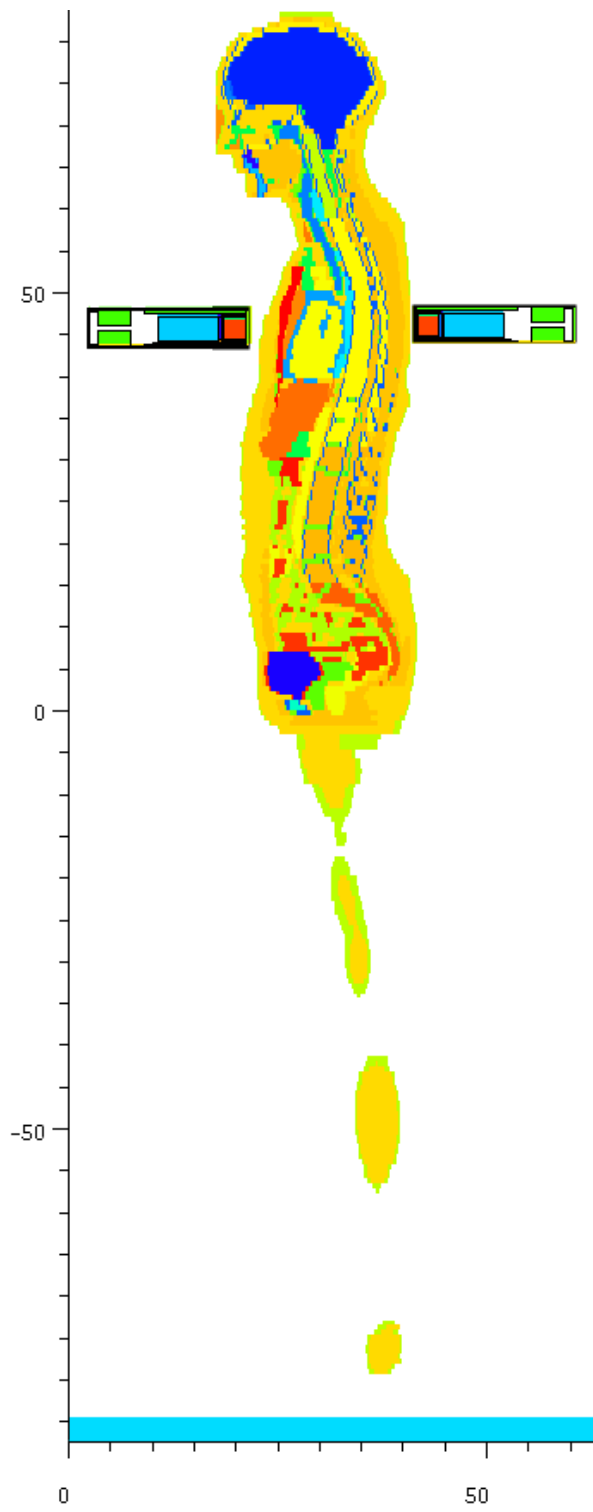


Figure 18. RFCP-Ludlum 44-2 at Chest

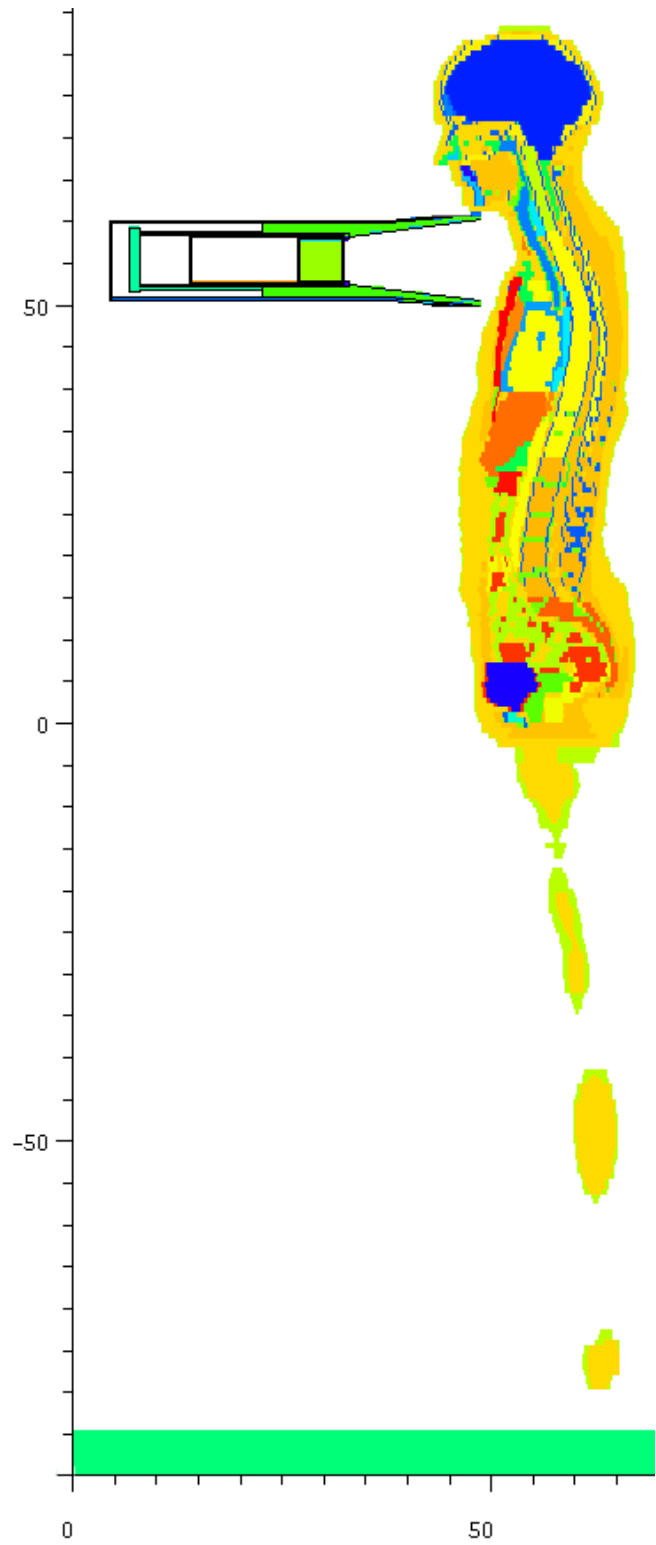


Figure 19. RFCP-Captus 3000 at Thyroid

When using the TPM-903B, position the client midway between the pillars, facing one pillar, as shown in Figures 10 and 15. If a young child needs to be supported to remain erect, hold the child by the shoulders but make sure nothing is between the child and the pillars. Only the standard model of the TPM-903B is illustrated—the extra-wide model is identical except for the wider spacing of the pillars. In Figure 10, the upper part of the instrument is truncated to save space in the illustration.

1.2.6 Performing the Assessment

Admit only one client at a time to the screening area. Keep other clients well away from this area. Record the name of the client to begin the assessment. Weigh or estimate the weights of children who are less than 15 years old—you can record the weight in either pounds or kilograms.

Ludlum Model 44-2 Gamma Scintillator

When using the Ludlum Model 44-2 gamma scintillator, hold the probe in a steady position for at least 30 s or until the count rate stabilizes. Hold the instrument in the position appropriate to the mode of intake and the principal radionuclide, as described earlier, as close to the body as is practical. Record the position of the probe and the distance from the front of the probe to the body. Record the measured count rate without subtracting the background. If using a multi-scale ratemeter, such as the Ludlum Model 16 illustrated in Figure 1, record both the pointer reading and the setting of the rotary multiplier switch (i.e., x1–x1000). The actual count rate can be calculated later—having both readings will enable you or another person to check the calculated rate.

If the count rate is at or near the top of the scale with the multiplier switch in its highest setting, you should also record readings taken with the detector at a distance of 1 ft from the body, still centered on the lungs, stomach, or thyroid, as appropriate. High radiation levels can exceed the linearity of the instrument, causing it to underreport the actual level. If the ICAT computer code will be used to perform the assessment, you can hold the probe at a distance of less than 1 ft.

Captus 3000 Thyroid Probe

When using the Captus 3000 thyroid probe, integrate the counts over 1–2 min, depending on the time available. As with the Ludlum Model 44-2 discussed above, hold the instrument in the position appropriate to the mode of intake and the principal radionuclide. Record the total counts without subtracting the background, and the integration time in minutes.

If the integrated counts are more than 3 million per minute, or if the MCA Main Screen on the laptop computer that controls the Captus 3000 Thyroid Uptake System indicates a dead time >10%, you should also record readings taken with the detector at a distance of 1 ft from the body, still centered on the lungs, stomach, or thyroid, as appropriate. High radiation levels can exceed the linearity of the instrument, causing it to underreport the actual level. If the ICAT computer code will be used to perform the assessment, you can hold the probe at a distance of less than 1 ft.

Instruments Measuring Exposure Rates

If using an instrument calibrated in exposure rates (e.g., having a scale marked in $\mu\text{R/h}$), such as an ionization chamber or an energy-compensated G-M counter, hold the instrument in the position appropriate to the mode of intake and the principal radionuclide, as described on page 5 of these instructions. The center of the active volume of the detector (the ionization chamber itself or the cavity of the G-M tube) should be 2 inches from the body. If this is impractical, or if the exposure rate exceeds the linear range of this instrument, move the detector away from the body, up to a distance of 3 ft. Record the position of the probe and the distance from the center of the detector to the body. Record the measured exposure rate without subtracting the background.

Model TPM-903B Portal Monitor

Use the Model TPM-903B portal monitor in the background count mode, even when assessing clients. This instrument is equipped with an occupancy sensor which forces the monitor into a fast count mode when it detects an object between the pillars. Although this is appropriate to the normal use of this monitor, which is screening individuals walking through the portal for external contamination, this mode is less sensitive to low level intakes of radionuclides. Disable or disconnect the occupancy sensor to allow the monitor to operate in background mode, which causes it to integrate counts over 20 s or longer intervals, depending on the background count time set on the instrument. Have the client remain in position for at least the duration of the background count time. If the client is internally contaminated with radioactive material, you will observe the count rate increasing and then fluctuating around a mean value.

The large-volume radiation detectors of the TPM-903B make this instrument sensitive to relatively low levels of radiation. By the same token, a very high radiation level will saturate the monitor, causing it to underreport the actual radiation intensity, which will lead to an underestimate of the client's intake of radioactive material. As a rule of thumb, any count rate greater than 50 kcps will lead to an underestimate, the error increasing significantly for count rates >100 kcps. If such a high count rate is observed, the client should be screened using a less sensitive instrument.

1.3 Calculating Intakes and Doses

Chapter 2 describes the use of the ICAT computer code to compute the intake activity and subsequent doses to an internally contaminated individual, using in-vivo measurements performed with various field instruments, as described above. ICAT has the advantage of allowing the use of energy windows other than those listed in Table 1, as well as taking into account both the weights and the ages of children under the age of 15. If the assessment will be performed with ICAT, you can skip the rest of this chapter.

If the ICAT code is not available, you can calculate intakes and doses using the tables in Appendices A and B, as described in the following sections.

1.3.1 Computing Net Count or Exposure Rates

If the rate meter used with the Ludlum Model 44-2 gamma scintillator displays count rates in cpm (counts per minute), no further conversion is needed. If you measure integral counts using the Captus 3000 thyroid probe, calculate the count rate by dividing the integral counts by the acquisition time in minutes. For either instrument, subtract the background count rate from the client count rate to obtain the net count rate from the client. The TPM-903B reads out the count rate in cps (counts per second). Subtract the background from the client count rate and multiply the result by 60 to obtain a net count rate in cpm. If using an instrument that measures exposure rates, subtract the background rate from the exposure rate from the client and convert to $\mu\text{R/h}$ if needed.

1.3.2 Computing Intakes

Tables A-1 to A-31 list calibration factors for assessing activities inhaled or ingested by internally contaminated individuals at selected times after intake. These factors relate the net count rate or net exposure rate measured by a given instrument to the intake of a given radionuclide. The assessment of inhaled intakes of ^{60}Co or ^{192}Ir requires you to specify the lung absorption type of the radionuclide, which depends on its chemical form. The lung absorption types of elements corresponding to the four radionuclides for which calibration factors were calculated are listed in Table 3. If the chemical form is not known, use the lung absorption type corresponding to unspecified compounds. When assessing a child, use the calibration factors for a reference individual nearest in *weight* to that of the client. The weights of reference individuals are listed in Table 2. For an adult, use the calibration factors appropriate to the sex of the client.

Table 3. Lung Absorption Types

Element	Lung Type	Chemical forms
Co	M	Unspecified compounds
	S	Oxides, hydroxides, halides, and nitrates
I	F	All compounds
Cs	F	All compounds
Ir	F	Unspecified compounds
	M	Metallic iridium, halides, and nitrates
	S	Oxides and hydroxides

Source: ICRP 2012, Table E.1

First, find the table appropriate to the radionuclide, the instrument, the pathway (mode of intake), and the lung absorption type. Next, find the time post intake closest to the elapsed time between the intake and the time of measurement. For all instruments except TPM-903B, find the calibration factor in the column corresponding to the pathway, the lung absorption type, the distance from the body, and the aspect (anterior or posterior). For the TPM-903B, find the calibration factor in the column corresponding to the pathway, the lung absorption type, the width between the pillars—standard (32 in) or extra wide (39.4 in)—and the LLD. Linear

interpolation may be used to determine a calibration factor for a time between two consecutive time steps, especially if there is a large difference between the calibration factors for the two time steps.

Multiply the count rate in cpm or the exposure rate in $\mu\text{R/h}$ by the appropriate calibration factor to determine the inhaled or ingested activity in becquerels (Bq). Divide by 37,000 if you need to obtain a value in microcuries (μCi).

A more detailed description of the use of these calibration factors is presented in Appendix [A](#).

1.3.3 Computing Doses

Tables [B-1](#) to [B-4](#) of Appendix [B](#) list coefficients that you can use to calculate the cumulative effective dose, which is the effective dose delivered to the client from the time of intake until the time of the assessment, as well as the committed effective dose absent any medical intervention. To calculate either dose, look up the appropriate dose coefficient and multiply it by the inhaled or ingested activity in units of Bq, calculated as described above. A more detailed description of the use of these dose coefficients is presented in Appendix [B](#).

Chapter 2

CALCULATING INTAKES AND DOSES USING ICAT

The intakes of radioactive materials and the subsequent doses can be calculated by use of the ICAT computer code. This program uses the count rates or exposure rates measured on a field instrument, along with information about the instrument, the client, the time of intake, and the radioactive material. The remainder of this chapter contains instructions for using the program—a modified version of these instructions can be accessed while executing the program. A technical overview of the program is presented in Chapter 3.

2.1 Quick Reference Guide to ICAT

ICAT includes two screens for user input and output. The first screen is displayed when the program opens—you can return to it by pressing the *Client* tab in the upper left-hand corner of each screen. The second screen is marked *Energy Windows*. The use of these screens is discussed below. The third screen, marked *Quick Reference*, displays a modified version of the quick reference guide presented in this section.

On some computer display monitors, the first screen may overflow the size of the display. Scroll bars are provided on the right and bottom sides of the screen, as needed, to enable you to see the rest of the screen. The screen prompts and display headings are underlined in the directions that follow. All entries are required unless stated otherwise. Some fields on the screen are dim or appear in light-shaded text. These fields are not available for the scenario selected by the user.

1. *Client*: This screen is used to enter information about the client and the incident leading to his or her exposure. The results of the assessment are also displayed on this screen. The screen consists of five panels.
 - a. The first time you access the program following a radiological incident, fill in information about the incident in the lower right-hand panel.
 - i. Principal mode of intake: Inhalation or Ingestion. Select Inhalation if the client was exposed to radioactive material that was dispersed as an aerosol or airborne dust. Select Ingestion if he or she consumed radioactively contaminated food or drink.
 - ii. Date client inhaled or ingested radioactive material, Time. Enter the date and time of intake as accurately as possible, since the assessment depends on the elapsed time from the time of intake until the time of measurement. For a radioactive dispersal device (RDD), this can be the time the incident occurred, or the time the client inhaled or ingested the radioactive material. Assessments cannot be performed if the intake was less than 1 hour or more than 30 days before the time of measurement. Chronic intakes over an extended period of time cannot be assessed by this methodology.
 - (1) Date can be selected by pressing the down arrow on the right and selecting the date from the popup calendar; or by placing the cursor in the window, selecting the month, day, or year, and incrementing or decrementing the value by pressing the up or down arrow key on the keyboard; or by entering a new value from the keyboard.

- (2) Time. The time consists of four fields: hour, minutes, seconds, and AM or PM. Any of these fields can be edited by selecting the field with the cursor and either entering the correct value or using the up and down arrows on the right side of the window to scroll through the values. The hour, minute, and AM/PM fields are required; the seconds are not needed.
- iii. Principal radionuclide: Select one of the four radionuclides listed. The radionuclide should be identified by radiation professionals with expertise in radionuclide identification.
- iv. Lung absorption type: Required for inhalation of ^{60}Co or ^{192}Ir . Once you press the radionuclide selection button, a field will appear on the right listing the lung absorption types of the given radionuclide and the corresponding chemical forms. The types—*F* (fast), *M* (medium), and *S* (slow)—refer to the speeds with which the distinct chemical forms of the radionuclide are absorbed by the lungs. If the chemical form is unknown, select the type that corresponds to Unspecified compounds. Lung absorption types of all radionuclides included in ICAT are listed in Table 3 of these instructions.

The information entered in this panel is saved until you press Clear Incident Data in the upper right-hand corner of this panel. Press this button to clear all data which were entered in the *Client* screen.

b. Client data (upper left-hand panel)

- i. Last name
- ii. First name (optional)
- iii. Age of client:
 - (1) For all clients 1 year or older, select Years and then select the age on the nearest birthday from the drop-down list.
 - (2) For infants under 1 year, select Months and then the age to the nearest month.
- iv. Sex of client (required for clients over 15 years old).
- v. Weight of client: Specify the weight if the client is less than 15 years old. Select lb (pounds) or kg, then enter the measured or estimated weight in the appropriate units. This entry is optional but recommended: entering the weight enables a more accurate assessment since body size affects the instrument reading for a given intake.

c. Data on measurements (lower left-hand panel)

- i. Instrument: Select one of four instruments from the drop-down list. Exposure Rate should be selected for any instrument that directly reads out exposure rates, such as an ionization chamber or an energy-compensated G-M counter. For all other instruments, verify the correct choice of LLD and ULD on the *Energy Windows* screen, accessed by pressing the Energy Windows tab in the upper left-hand corner of every screen. Information on the use of this screen is provided in Paragraph 2, below.
- ii. Date of measurement: The date can be selected by pressing the down arrow on the right side of the window and selecting the date from the popup calendar; or by placing the

cursor in the window, selecting the month, day, or year, and incrementing or decrementing the value by pressing the up or down arrow key on the keyboard; or by entering a new value from the keyboard.

- iii. Time of measurement: The time consists of four fields: hour, minutes, seconds, and AM or PM. Any of these fields can be edited by selecting the field with the cursor and either entering the correct value or using the up and down arrows on the right to scroll through the values. The hour, minute, and AM/PM fields are required; the seconds are not needed.
- iv. All instruments except TPM-903B:
 - (1) Location: The choice of the instrument's location depends on the instrument, the mode of intake, and the radionuclide. For all radionuclides except ^{131}I , the probe must be located opposite the chest (centered on the lungs) if the intake is by inhalation, or opposite the abdomen (centered on the lungs) if the intake is by ingestion. The same locations can be used with ^{131}I ; however, for this radionuclide, the instrument can be optionally located in front of the thyroid. Sample locations of the various instruments with respect to children of several ages and adults of both sexes are shown in Figures 4–19.
 - (2) Position: If the instrument is opposite the chest or the abdomen, it can be in the anterior (in front of the body) or posterior position. If it is at the thyroid, it must be in the anterior position.
 - (3) Distance: Select the distance from the detector to the body from the list of options for the given instrument. The distance is measured from the body to the front of the Ludlum 44-2 or the Captus 3000 probe. It must be estimated to the center of the active volume of an ionization chamber, an energy-compensated G-M counter, or any other instrument that is used to measure an Exposure Rate. (The choice of distances displayed on the screen changes with the choice of detector.) To use a distance that is not listed, select Other. You will then be prompted to select the units: inches, feet, or cm. Enter any distance that is within the range of the listed distances: 0–1 ft for the Ludlum 44-2 or the Captus 3000, 2 inches to 3 ft for Exposure Rate measurements.
- v. TPM-903B: The TPM-903B offers a choice of two configurations: Standard width: 32-inch (81.3 cm) separation between the pillars, and Extra wide: 39.4 inches (100 cm). There are no optional locations for the TPM-903B—the client must be positioned in the center, facing one of the pillars.
- vi. Client: The entry in the Client panel is based on the reading taken with the instrument and depends on the instrument and the mode of measurement.
 - (1) Ludlum 44-2: Select cpm or kcpm if the Ludlum 44-2 is used in the count-rate mode (the common mode for this probe, which is typically attached to a rate meter) and enter the reading. Select total counts or total kcounts if it is attached to a scaler (which can produce more accurate counts) and enter the appropriate reading—you will be prompted to also enter the Count time (min).

- (2) Captus 3000: Select cpm or kcpm if the Captus 3000 is used in count-rate mode. Select total counts or total kcounts if it is used in the integral mode, in which case you will be prompted to enter the Count time (min).
- (3) TPM-903B: The TPM-903B displays the count rate in ncps that is the only choice of units for this instrument.
- (4) Exposure Rate: For an instrument measuring exposure rates, enter the readings in μR/h. If the instrument displays exposure rates in mR/h, multiply the reading by 1,000.
- vii. Background: The entry of Background presents the same choices of units as the Client reading for a given instrument. Background and client readings can be in different units if such a choice is available. Note that, unlike the Client reading, the Background is not reinitialized when you proceed to survey the Next Client. You should verify that the Background entry is correct before proceeding.
- d. Notes (optional): Bottom panel. You can use this window to enter notes into the client's record.
- e. Upper right-hand panel
 - i. Calculate Results: After all other entries have been completed, press Calculate Results to display the intake and doses.

Results panel:

- (1) You can select the units for displaying results.
 - (a) Conventional units: Intake will be displayed in μCi (microcuries), doses in rem.
 - (b) SI: Intake will be displayed in MBq, doses in mSv.
- (2) Calculated intake: For the inhalation pathway, this is the inhaled activity, and includes a large fraction that is promptly expelled. Dose calculations are based on the entire intake, including the expelled fraction. For the ingestion pathway, it is the total ingested activity.
- (3) Cumulative effective dose (to present time): This is the effective dose that was delivered to the client from the time of intake to the time you press the Calculate Results button (not to the time of measurement).⁴
- (4) Committed effective dose: Effective dose in the absence of medical intervention over the 50 years following intake in the case of adults, or until age 70 for clients less than 20 years old.

The information on each client is saved to a text file. The directory (or subfolder) in which the file is located is listed at the bottom of the *Client* screen and can be accessed by clicking on the path name (i.e., the text on the left at the bottom of the screen). The file is named according to the following convention: *lastname_firstname* (optional)

⁴ It is assumed that the computer has a clock and that the date and time are set correctly.

_yy_mm_dd_n.txt, where *yy* is the 2-digit year, *mm* is the month and *dd* is the day of the month, both expressed as 2-digit numbers, *n* is a sequence number that begins with 1 and is incremented if there are repeated analyses for the same client (or a client of the same name) on the same day.

- ii. Press Print Results to open the printer dialogue on your computer and produce a one-page report on the individual client that lists the calculated results as well as all the information you have entered.
- iii. Press Next Client to reset the client-specific data.
 - (1) Client data (upper left-hand panel): All information in this panel will need to be reentered.
 - (2) Data on measurements (lower left-hand panel)
 - (a) Instrument will not be reset. Change this selection if needed.
 - (b) Date of measurement will be reset to today's date—it must be changed if this is not correct.
 - (c) Time of measurement will be reset to midnight—the correct time must be entered.
 - (d) Location, Position, and Distance will not be reset. Verify that the selections are current or change them as required.
 - (3) Client instrument reading and Count time (if entered) will be reset; the units will not be reset and should be changed as needed.
 - (4) Background will not be reset, but should be reentered if the background has changed since the previous client was assessed.

Information about the radiological incident that appears in the lower right-hand panel will remain unchanged. Review these entries to make sure they are still valid.

2. *Energy Windows*

- a. Ludlum 44-2: The Energy windows for Ludlum 44-2 depend on the type of meter or control unit to which the probe is attached. Rate meters typically used with this probe do not allow the user to select energy windows. In such a case, verify that the Default set of Lower level discriminator and Upper level discriminator values is selected the first time you run ICAT. If using a control unit equipped with a single- or multichannel analyzer, you can select a Custom set of windows. You can change the Custom values of the Lower level discriminator or the Upper level discriminator to match the actual settings on the instrument by pressing Edit Energy Windows in the top right-hand portion of the screen. You can only enter values that fall within the range of the default values. Once you finish editing, press Save Energy Windows. Select Custom to utilize these windows in an assessment. You can restore the default windows at any time by pressing Restore Original. You can select Default to use the default windows in the current assessment while saving the changed Custom values for future use. You only need to enter discriminator values for

the radionuclide being currently assessed—values for other radionuclides remain unchanged.

- b. The Captus 3000 Thyroid Uptake System allows the user to set energy windows on this instrument. The Default Lower level discriminator and Upper level discriminator settings displayed by ICAT correspond to the energy windows used in deriving the calibration factors. Either set the energy window on the instrument to correspond to the ICAT Default discriminator values or change the ICAT values to correspond to the settings on the Captus 3000 by specifying a Custom set of windows, as described above for the Ludlum 44-2. As stated on page 4 of these instructions, the values of the *Start* and *End Channels* displayed by the Captus 3000 are not the same as the lower and upper energies in keV, which are required for these analyses. Using a set of ICAT discriminator values that do not match the energy window on the instrument will result in an invalid assessment. For more information on setting energy windows on this instrument, consult the “Captus 3000 Thyroid Uptake System Owner’s Manual” (Capintec 2001).
- c. The Energy windows for TPM-903B are the electronic discriminator settings displayed in volts. One volt \approx 330 keV. The Default and Alternate values correspond to different factory settings on this instrument—the default values are those on instruments of recent manufacture, while the alternate values are for older instruments. Verify the discriminator settings on the instrument you are using and select the Default or Alternate Lower level discriminator and Upper level discriminator settings, as appropriate. If the factory settings on the instrument are changed, select Custom discriminator settings and Edit Energy Windows for the radionuclide in question, as described above for the Ludlum 44-2.
- d. Exposure Rate: Energy windows are not utilized for instruments that measure exposure rates.

2.2 Interpretation of Results

There are several cautions that should be observed in interpreting the results calculated with this program.

2.2.1 High Count Rates

If the gross count rate (client counts without background subtraction) on the instruments containing scintillation detectors (all the instruments in the present studies except those measuring exposure rates) exceeds 100 kcps (6 million cpm), these instruments will most likely begin to lose counts, as discussed in Section 1.2.6.

2.2.2 Accuracy of Model

The ICAT code utilizes calibration factors that are based on computer simulations of the response of field instruments to radionuclides distributed in various regions of the human body. These calculations are based on anatomical models of the human body and on biokinetic models that describe how radionuclides are distributed in the body at various times after intake, as

described in Part II of the present series (Anigstein, Olsher, Loomis, and Ansari 2016). These models were developed to determine radiation protection standards for the general population and are based on the anatomy and physiology of reference individuals; they do not necessarily reflect the anatomy and physiology of any given individual.

Chapter 3

TECHNICAL DESCRIPTION OF ICAT PROGRAM

This chapter presents a technical overview of the ICAT program. It is not a complete description of the code, nor is intended to be a programmer's guide.

3.1 Installation Notes⁵

ICAT can be installed on a computer operating under Microsoft Windows by running the program setup.exe, which is part of the software package. Minimum system requirements are Windows XP or higher and approximately 98 MB of free disk space. ICAT can be installed to the default folder, \Program Files, or in another folder specified by the user. A folder named "ICAT" will be created in the specified location. A button labeled "Disk Cost...", which appears during setup, can be used to check available disk space on your computer. Once the installation is complete, the ICAT icon will appear on your desktop.

3.2 Modules

The ICAT code comprises two modules. One is the driver program, compiled with Microsoft Visual Basic 2010, that provides the user interface described in Chapter 2. The other is the analytical program, which is written in Fortran 90 and compiled with the Lahey Fortran 90 compiler.

3.3 Calculation of Intakes and Doses

3.3.1 Adults

The element-specific systemic biokinetic models incorporated in the DCAL System (ORNL 2006) define the onset of adulthood as age 20 for the four radionuclides included in ICAT.

Assessment Using Precalculated Calibration Factors

If the counts from an adult were collected with a scintillation detector using one of the energy windows listed in Table 1, or with an instrument measuring exposure rates, and if the instrument (other than a TPM-903B) was located at one of the positions listed in Tables A-1 to A-31, the assessment is relatively straightforward. The assessment uses calibration factors for adult males and females that correspond to those listed in Appendix A; however, the factors in the ICAT data files are tabulated for 50 time steps, spaced logarithmically over the interval 1 h–30 d, rather than the 12 time steps in Appendix A. Furthermore, they are the inverses of the factors in Appendix A and are tabulated in units of cps/Bq or $\mu\text{R/h}$ per Bq.

⁵ More detailed installation notes are found in a file named "Readme.txt" which is part of the ICAT installation package.

First, a calibration factor specific to the actual elapsed time between intake and measurement is calculated by linear interpolation between the calibration factors tabulated for the two time steps that span the elapsed time. The net count rate (client count minus background) in cps or the exposure rate in $\mu\text{R}/\text{h}$ is divided by the calculated calibration factor to yield the estimated intake reported by the program.

Next, the dose that has been already delivered to the client from the time of intake until the time that ICAT is executed is calculated by the use of dose coefficients, a subset of which is listed in Appendix B.⁶ These coefficients are tabulated for the same 50 time steps as the calibration factors discussed above. A coefficient corresponding to the elapsed time is calculated by linear interpolation between the tabulated values for the two time steps that span the elapsed time and is multiplied by the calculated intake to yield the cumulative effective dose. The committed effective dose resulting from the intake is calculated by multiplying the intake by the coefficient for the committed effective dose which is listed in Appendix B.

Assessment Using Other Energy Windows

If the assessment employs a scintillation detector using an energy window other than one listed in Table 1, a calibration factor is calculated that is specific to the individual case. The normalized count rate from each anatomical region that is a source region in the biokinetic model of the given radionuclide for the pathway in question (inhalation or ingestion) is calculated by summing the normalized counts in the spectra of count rates from that radionuclide in each 1 keV-wide energy bin that is within a given window.⁷ If one of the new window limits falls between the limits of a 1 keV bin (i.e., if the window limit, expressed in keV, is not an integer), the counts in that bin are apportioned according to the fraction of the bin that lies inside this window. Next, the normalized count rate from each region that is within the new window is multiplied by the fractional activity in that region at the time the counts are measured. Finally, the products of fractional activity and normalized count rate from each region are summed to produce a calibration factor. The remainder of the assessment is performed in the same manner as described previously.

3.3.2 Preadults: 15 Years and Older

The assessment of a 15-y-old is performed in a manner analogous to that of an adult, using the appropriate age-dependent data. If the individual is older than 15 but younger than 20, two separate assessments are performed: one for a 15-y-old, the other for an adult of the same sex as

⁶ Note that the time of the execution of the program will, in general, occur later than the instrumental measurement.

⁷ The source regions comprise all anatomical regions which, in the aggregate, contain at least 99% of the activity of the radionuclide during the time span—1 h to 30 d—that is addressed in the present study. These regions, and the normalized count rates on instruments using the sets of energy windows listed in Table 1 in the present report, are listed in Part III of the present series (Anigstein and Olsher 2016, Appendix C). Regions that do not contain significant fractions of the intake activity are omitted from the compressed model constructed for the present studies. A detailed discussion of the biokinetic models as they are applied to these assessments is presented in Part II of the present series (Anigstein, Olsher, Loomis, and Ansari 2016).

the client. The intakes and doses to this individual are calculated by linear interpolation between the values derived from these two assessments, based on the client's age.

3.3.3 Children Under Age 15

The count rates and exposure rates from anatomical regions of children 15 years old and younger in the ICAT data files were calculated using anatomical models that are based on reference individuals whose ages and weights are listed in Table 2. However, the response of a detector to a given activity in a given region is more likely to correlate to the weight of the client rather than to his or her age. Therefore, unless the client's weight is equal to the mass of the reference individual of the same age interpolated from Table 2, ICAT calculates a calibration factor specific to both the weight and the age of the client.

In the case of scintillation detectors, ICAT first calculates the normalized count rates from anatomical regions of the two reference individuals whose weights span the weight of the client, using the tabulated spectra and the energy window used for measuring the counts, as described in Section 3.3.1, and interpolates between them on the basis of the client's weight. In the case of exposure rate measurements, ICAT calculates the corresponding normalized exposure rates in an analogous manner. In either case, the time-dependent fractional activity in each region of each of the two reference individuals whose ages span the age of the client is calculated as discussed previously. An age-adjusted fractional activity is then calculated by interpolating between these sets of fractional activities. The weight-adjusted normalized count or exposure rate from each region is then multiplied by the age-adjusted activity fraction. The resulting products are summed over all regions to yield an individual calibration factor for the given client.

Appendix A

CALIBRATION FACTORS FOR CONVERTING IN-VIVO MEASUREMENTS TO INTAKES

Tables A-1 to A-31 list a set of calibration factors that were calculated to provide a simple method of estimating intakes without using the ICAT computer code (Anigstein et al. 2014), as described in Section 1.3. Factors that relate the count rate measured by one of three physical instruments to the inhaled activity of a given radionuclide with a given lung absorption type, or to the ingested activity, are listed in Tables A-1 to A-20. Factors for relating exposure rates to intakes are listed in Tables A-21 to A-31.

Calibration factors for the Ludlum Model 44-2 gamma scintillator and the Captus 3000 thyroid probe utilized the energy window specified for each instrument and each radionuclide, as discussed in Section 1.2.3.⁸ Separate calibration factors were calculated for each detector-to-body distance, and for detectors in the anterior and posterior positions with respect to the body. The detectors were assumed to be positioned at the level of the lungs for assessing inhaled intakes and at the level of the stomach for ingested intakes. Additional calibration factors were calculated for detectors anterior to the thyroid for assessing intakes of ¹³¹I. Several combinations of detector positions and anthropomorphic phantoms representing reference children of five ages and the reference adult male and female are illustrated in Figures 4 to 19.

The following procedure enables you to use these tables to estimate the initial activity taken in by an internally contaminated individual:

- Determine the most likely pathway: inhalation or ingestion.
- For inhalation of ⁶⁰Co or ¹⁹²Ir, determine the lung absorption type of the radionuclide. (The lung absorption types of elements whose isotopes are included in the present analysis are listed in Table 3 of the main report.)
- When assessing a client less than 15 years old, use Table 2 to find the age of the reference individual whose weight is nearest to the weight of the client. Use the calibration factor corresponding to a child of that age. If the client's weight is unknown, use the calibration factor corresponding to a reference individual whose age is nearest to the age of the client.
- When assessing a client between 15 and 17½ years old, use the calibration factor for a 15-y-old.
- Use the calibration factor for an adult of the same sex for a client more than 17½ years old.
- In the column corresponding to the instrument and position (or energy window and width between columns in the case of the TPM-903B portal monitor), find the factor for the time post intake closest to the elapsed time between the time of intake and the

⁸ Energy windows cannot be set on a rate meter typically used with the Ludlum Model 44-2. The calculation assumes windows spanning the entire energy range of 1 keV to the maximum energy for each radionuclide.

time the measurement was performed. (You can use linear interpolation if there are significant differences between factors for two consecutive time steps.)

- Multiply the net count rate in counts per minute (cpm), or net exposure rate in $\mu\text{R/h}$, by the appropriate calibration factor to determine the intake in becquerels (Bq). (To obtain a value in microcuries (μCi), divide the calculated activity by 37,000.)

Note that for the inhalation pathway, the assessment yields the total inhaled activity. This activity includes a fraction, which ranges from about 40% to 50% in the case of 1 μm AMAD particles (the particle size distribution assumed in the present analysis), that was promptly expelled. The total inhaled activity is the relevant quantity for estimating doses from intakes via this pathway.

A more convenient assessment tool is the ICAT computer code, which utilizes the calculation described in the present report to compute the intake activity and resulting doses to an internally contaminated individual. ICAT has the further advantages of allowing the use of energy windows other than those described above and intermediate distances of the detector from the body, as well as taking into account the weight as well as the age of children under the age of 15. Employing 50 time steps instead of the 12 steps listed in Tables [A-1](#) to [A-31](#), and using linear interpolation to calculate intakes and doses specific to the individual assessment, ICAT produces more precise results.

Table A-1. Inhaled Activity of ⁶⁰Co vs. Count Rate on Ludlum 44-2 (Bq/cpm)

Time post intake		Pathway/distance of detector from chest/aspect							
		Inhalation: Type M				Inhalation: Type S			
d	h	Contact		1 ft		Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	5.14E+0	7.66E+0	6.55E+1	8.84E+1	5.18E+0	7.63E+0	6.52E+1	8.84E+1
	2	5.60E+0	7.95E+0	6.70E+1	8.80E+1	5.72E+0	8.00E+0	6.65E+1	8.78E+1
	4	5.96E+0	8.19E+0	6.93E+1	8.96E+1	6.20E+0	8.37E+0	6.84E+1	8.90E+1
	8	6.43E+0	8.62E+0	7.45E+1	9.45E+1	6.74E+0	8.87E+0	7.27E+1	9.29E+1
	12	7.06E+0	9.18E+0	8.09E+1	1.00E+2	7.37E+0	9.43E+0	7.83E+1	9.79E+1
1	24	9.34E+0	1.11E+1	1.06E+2	1.24E+2	9.66E+0	1.13E+1	1.02E+2	1.20E+2
2		1.42E+1	1.45E+1	1.78E+2	1.92E+2	1.47E+1	1.48E+1	1.80E+2	1.95E+2
4		1.99E+1	1.79E+1	3.15E+2	3.13E+2	2.09E+1	1.84E+1	3.54E+2	3.50E+2
8		2.29E+1	2.00E+1	3.94E+2	3.82E+2	2.33E+1	1.99E+1	4.43E+2	4.24E+2
10		2.38E+1	2.07E+1	4.11E+2	3.98E+2	2.38E+1	2.03E+1	4.53E+2	4.34E+2
20		2.77E+1	2.41E+1	4.84E+2	4.68E+2	2.60E+1	2.22E+1	4.97E+2	4.77E+2
30		3.13E+1	2.73E+1	5.47E+2	5.30E+2	2.81E+1	2.40E+1	5.37E+2	5.15E+2
1-y-old									
	1	8.53E+0	1.22E+1	6.82E+1	9.99E+1	8.59E+0	1.21E+1	6.79E+1	9.99E+1
	2	9.38E+0	1.29E+1	7.07E+1	9.92E+1	9.52E+0	1.29E+1	7.03E+1	9.89E+1
	4	1.01E+1	1.34E+1	7.40E+1	1.01E+2	1.03E+1	1.35E+1	7.33E+1	1.01E+2
	8	1.09E+1	1.41E+1	8.00E+1	1.07E+2	1.12E+1	1.43E+1	7.87E+1	1.06E+2
	12	1.19E+1	1.50E+1	8.71E+1	1.14E+2	1.22E+1	1.51E+1	8.54E+1	1.12E+2
1	24	1.53E+1	1.78E+1	1.15E+2	1.40E+2	1.55E+1	1.77E+1	1.13E+2	1.37E+2
2		2.22E+1	2.26E+1	1.97E+2	2.16E+2	2.21E+1	2.22E+1	1.96E+2	2.15E+2
4		2.96E+1	2.72E+1	3.55E+2	3.50E+2	2.91E+1	2.63E+1	3.69E+2	3.63E+2
8		3.33E+1	2.99E+1	4.40E+2	4.21E+2	3.18E+1	2.81E+1	4.51E+2	4.29E+2
10		3.44E+1	3.08E+1	4.56E+2	4.37E+2	3.24E+1	2.87E+1	4.60E+2	4.38E+2
20		3.95E+1	3.54E+1	5.28E+2	5.05E+2	3.53E+1	3.12E+1	5.01E+2	4.77E+2
30		4.45E+1	3.99E+1	5.93E+2	5.67E+2	3.79E+1	3.36E+1	5.39E+2	5.13E+2
5-y-old									
	1	1.33E+1	1.75E+1	8.51E+1	1.23E+2	1.33E+1	1.73E+1	8.48E+1	1.23E+2
	2	1.46E+1	1.85E+1	8.89E+1	1.23E+2	1.47E+1	1.84E+1	8.86E+1	1.22E+2
	4	1.56E+1	1.94E+1	9.30E+1	1.26E+2	1.60E+1	1.94E+1	9.25E+1	1.25E+2
	8	1.68E+1	2.03E+1	9.98E+1	1.33E+2	1.72E+1	2.04E+1	9.87E+1	1.31E+2
	12	1.82E+1	2.14E+1	1.08E+2	1.42E+2	1.86E+1	2.14E+1	1.06E+2	1.39E+2
1	24	2.28E+1	2.49E+1	1.41E+2	1.74E+2	2.28E+1	2.45E+1	1.38E+2	1.70E+2
2		3.06E+1	3.01E+1	2.30E+2	2.56E+2	2.99E+1	2.90E+1	2.26E+2	2.53E+2
4		3.78E+1	3.45E+1	3.80E+2	3.76E+2	3.62E+1	3.27E+1	3.83E+2	3.79E+2
8		4.16E+1	3.74E+1	4.56E+2	4.37E+2	3.87E+1	3.46E+1	4.49E+2	4.30E+2
10		4.29E+1	3.86E+1	4.72E+2	4.52E+2	3.95E+1	3.53E+1	4.59E+2	4.39E+2
20		4.92E+1	4.44E+1	5.44E+2	5.20E+2	4.29E+1	3.84E+1	4.99E+2	4.78E+2
30		5.54E+1	5.00E+1	6.11E+2	5.85E+2	4.61E+1	4.14E+1	5.37E+2	5.14E+2

Table A-1 (continued)

Time post intake		Pathway/distance of detector from chest/aspect							
		Inhalation: Type M				Inhalation: Type S			
d	h	Contact		1 ft		Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
10-y-old									
	1	1.74E+1	2.31E+1	9.01E+1	1.32E+2	1.75E+1	2.29E+1	8.93E+1	1.32E+2
	2	1.91E+1	2.48E+1	9.47E+1	1.33E+2	1.95E+1	2.47E+1	9.39E+1	1.33E+2
	4	2.05E+1	2.60E+1	9.97E+1	1.37E+2	2.12E+1	2.62E+1	9.86E+1	1.36E+2
	8	2.20E+1	2.72E+1	1.08E+2	1.45E+2	2.29E+1	2.76E+1	1.06E+2	1.43E+2
	12	2.38E+1	2.87E+1	1.17E+2	1.54E+2	2.46E+1	2.89E+1	1.15E+2	1.51E+2
1	24	2.98E+1	3.32E+1	1.54E+2	1.89E+2	3.00E+1	3.28E+1	1.49E+2	1.84E+2
2		3.96E+1	3.98E+1	2.48E+2	2.76E+2	3.86E+1	3.84E+1	2.44E+2	2.72E+2
4		4.82E+1	4.51E+1	4.02E+2	4.03E+2	4.58E+1	4.27E+1	4.03E+2	4.03E+2
8		5.29E+1	4.89E+1	4.79E+2	4.67E+2	4.89E+1	4.51E+1	4.69E+2	4.56E+2
10		5.46E+1	5.04E+1	4.96E+2	4.83E+2	4.98E+1	4.59E+1	4.79E+2	4.66E+2
20		6.27E+1	5.80E+1	5.71E+2	5.56E+2	5.43E+1	5.01E+1	5.22E+2	5.07E+2
30		7.07E+1	6.55E+1	6.42E+2	6.26E+2	5.85E+1	5.40E+1	5.62E+2	5.46E+2
15-y-old									
	1	2.42E+1	3.01E+1	1.10E+2	1.54E+2	2.43E+1	2.95E+1	1.10E+2	1.52E+2
	2	2.63E+1	3.21E+1	1.16E+2	1.55E+2	2.66E+1	3.16E+1	1.15E+2	1.54E+2
	4	2.80E+1	3.36E+1	1.22E+2	1.60E+2	2.87E+1	3.35E+1	1.21E+2	1.58E+2
	8	2.98E+1	3.53E+1	1.31E+2	1.69E+2	3.07E+1	3.52E+1	1.30E+2	1.66E+2
	12	3.19E+1	3.69E+1	1.42E+2	1.79E+2	3.25E+1	3.67E+1	1.39E+2	1.75E+2
1	24	3.80E+1	4.15E+1	1.80E+2	2.14E+2	3.77E+1	4.04E+1	1.75E+2	2.07E+2
2		4.67E+1	4.74E+1	2.67E+2	2.88E+2	4.49E+1	4.51E+1	2.59E+2	2.78E+2
4		5.37E+1	5.21E+1	3.79E+2	3.76E+2	5.03E+1	4.87E+1	3.69E+2	3.63E+2
8		5.82E+1	5.61E+1	4.33E+2	4.21E+2	5.32E+1	5.11E+1	4.11E+2	3.97E+2
10		6.01E+1	5.79E+1	4.48E+2	4.35E+2	5.43E+1	5.21E+1	4.20E+2	4.05E+2
20		6.91E+1	6.65E+1	5.15E+2	4.99E+2	5.94E+1	5.70E+1	4.58E+2	4.42E+2
30		7.82E+1	7.53E+1	5.80E+2	5.62E+2	6.42E+1	6.15E+1	4.94E+2	4.76E+2
Adult male									
	1	1.77E+1	2.63E+1	9.88E+1	1.44E+2	1.73E+1	2.56E+1	9.75E+1	1.30E+2
	2	1.97E+1	2.83E+1	1.03E+2	1.47E+2	1.93E+1	2.76E+1	1.01E+2	1.36E+2
	4	2.12E+1	3.01E+1	1.06E+2	1.54E+2	2.09E+1	2.95E+1	1.04E+2	1.42E+2
	8	2.26E+1	3.18E+1	1.13E+2	1.64E+2	2.22E+1	3.12E+1	1.10E+2	1.51E+2
	12	2.41E+1	3.33E+1	1.23E+2	1.73E+2	2.35E+1	3.25E+1	1.19E+2	1.58E+2
1	24	2.87E+1	3.74E+1	1.58E+2	2.04E+2	2.75E+1	3.59E+1	1.51E+2	1.85E+2
2		3.53E+1	4.35E+1	2.37E+2	2.74E+2	3.33E+1	4.10E+1	2.27E+2	2.45E+2
4		4.07E+1	4.88E+1	3.40E+2	3.62E+2	3.77E+1	4.54E+1	3.27E+2	3.20E+2
8		4.41E+1	5.27E+1	3.89E+2	4.07E+2	3.98E+1	4.77E+1	3.65E+2	3.50E+2
10		4.54E+1	5.42E+1	4.01E+2	4.20E+2	4.06E+1	4.86E+1	3.72E+2	3.56E+2
20		5.20E+1	6.18E+1	4.60E+2	4.81E+2	4.41E+1	5.27E+1	4.05E+2	3.87E+2
30		5.86E+1	6.94E+1	5.17E+2	5.40E+2	4.75E+1	5.65E+1	4.35E+2	4.16E+2
Adult female									
	1	1.88E+1	2.14E+1	9.77E+1	1.31E+2	1.84E+1	2.07E+1	9.67E+1	1.42E+2
	2	2.08E+1	2.35E+1	1.02E+2	1.37E+2	2.06E+1	2.29E+1	1.01E+2	1.45E+2
	4	2.28E+1	2.52E+1	1.07E+2	1.44E+2	2.27E+1	2.48E+1	1.05E+2	1.52E+2
	8	2.48E+1	2.67E+1	1.16E+2	1.53E+2	2.48E+1	2.63E+1	1.14E+2	1.61E+2
	12	2.66E+1	2.78E+1	1.26E+2	1.62E+2	2.64E+1	2.73E+1	1.23E+2	1.69E+2
1	24	3.13E+1	3.06E+1	1.64E+2	1.90E+2	3.06E+1	2.95E+1	1.59E+2	1.97E+2
2		3.77E+1	3.43E+1	2.49E+2	2.54E+2	3.60E+1	3.23E+1	2.43E+2	2.65E+2
4		4.28E+1	3.73E+1	3.62E+2	3.32E+2	3.99E+1	3.45E+1	3.53E+2	3.51E+2
8		4.62E+1	4.00E+1	4.15E+2	3.71E+2	4.20E+1	3.61E+1	3.95E+2	3.86E+2
10		4.75E+1	4.11E+1	4.28E+2	3.83E+2	4.28E+1	3.68E+1	4.02E+2	3.93E+2
20		5.43E+1	4.69E+1	4.91E+2	4.38E+2	4.64E+1	3.99E+1	4.38E+2	4.27E+2
30		6.10E+1	5.28E+1	5.51E+2	4.92E+2	4.98E+1	4.28E+1	4.71E+2	4.59E+2

Table A-2. Ingested Activity of ⁶⁰Co vs. Count Rate on Ludlum 44-2 (Bq/cpm)

Time post intake		Distance of detector from abdomen/aspect			
		Contact		1 ft	
d	h	Anterior	Posterior	Anterior	Posterior
Infant					
	1	1.59E+0	2.71E+0	3.57E+1	4.11E+1
	2	1.89E+0	2.73E+0	3.67E+1	4.10E+1
	4	2.18E+0	2.92E+0	3.84E+1	4.23E+1
	8	2.49E+0	3.28E+0	4.15E+1	4.53E+1
	12	2.82E+0	3.63E+0	4.50E+1	4.86E+1
1	24	3.98E+0	4.86E+0	5.81E+1	6.12E+1
2		6.88E+0	7.92E+0	9.29E+1	9.46E+1
4		1.20E+1	1.33E+1	1.59E+2	1.57E+2
8		1.67E+1	1.84E+1	2.22E+2	2.18E+2
10		1.84E+1	2.03E+1	2.45E+2	2.41E+2
20		2.59E+1	2.85E+1	3.45E+2	3.38E+2
30		3.08E+1	3.38E+1	4.09E+2	4.01E+2
1-y-old					
	1	2.28E+0	4.01E+0	3.72E+1	4.53E+1
	2	2.71E+0	4.01E+0	3.81E+1	4.45E+1
	4	3.04E+0	4.22E+0	3.92E+1	4.54E+1
	8	3.39E+0	4.72E+0	4.15E+1	4.82E+1
	12	3.85E+0	5.27E+0	4.46E+1	5.13E+1
1	24	5.78E+0	7.41E+0	5.91E+1	6.57E+1
2		1.22E+1	1.45E+1	1.12E+2	1.21E+2
4		3.19E+1	3.59E+1	2.93E+2	3.03E+2
8		5.25E+1	5.82E+1	4.99E+2	5.06E+2
10		5.83E+1	6.45E+1	5.54E+2	5.62E+2
20		8.21E+1	9.08E+1	7.81E+2	7.90E+2
30		9.77E+1	1.08E+2	9.28E+2	9.39E+2
5-y-old					
	1	2.94E+0	5.12E+0	3.77E+1	4.73E+1
	2	3.57E+0	5.23E+0	3.92E+1	4.63E+1
	4	4.07E+0	5.61E+0	4.05E+1	4.71E+1
	8	4.56E+0	6.41E+0	4.28E+1	5.01E+1
	12	5.20E+0	7.25E+0	4.63E+1	5.36E+1
1	24	7.95E+0	1.05E+1	6.23E+1	6.97E+1
2		1.72E+1	2.09E+1	1.21E+2	1.31E+2
4		4.52E+1	5.12E+1	3.25E+2	3.35E+2
8		7.43E+1	8.22E+1	5.60E+2	5.67E+2
10		8.25E+1	9.12E+1	6.23E+2	6.30E+2
20		1.16E+2	1.28E+2	8.79E+2	8.88E+2
30		1.38E+2	1.53E+2	1.05E+3	1.06E+3

Table A-2 (continued)

Time post intake		Distance of detector from abdomen/aspect			
d	h	Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior
10-y-old					
	1	3.76E+0	6.40E+0	3.75E+1	4.84E+1
	2	4.62E+0	6.59E+0	3.92E+1	4.73E+1
	4	5.31E+0	7.05E+0	4.09E+1	4.83E+1
	8	5.97E+0	8.05E+0	4.38E+1	5.17E+1
	12	6.85E+0	9.18E+0	4.77E+1	5.58E+1
1	24	1.06E+1	1.36E+1	6.52E+1	7.39E+1
2		2.33E+1	2.77E+1	1.29E+2	1.40E+2
4		6.09E+1	6.79E+1	3.56E+2	3.65E+2
8		9.89E+1	1.08E+2	6.23E+2	6.20E+2
10		1.10E+2	1.20E+2	6.93E+2	6.90E+2
20		1.55E+2	1.69E+2	9.78E+2	9.72E+2
30		1.84E+2	2.01E+2	1.16E+3	1.16E+3
15-y-old					
	1	4.95E+0	8.23E+0	3.78E+1	4.96E+1
	2	6.11E+0	8.58E+0	3.99E+1	4.89E+1
	4	7.10E+0	9.20E+0	4.17E+1	5.03E+1
	8	8.07E+0	1.05E+1	4.48E+1	5.41E+1
	12	9.33E+0	1.21E+1	4.92E+1	5.85E+1
1	24	1.47E+1	1.81E+1	6.81E+1	7.79E+1
2		3.22E+1	3.74E+1	1.37E+2	1.49E+2
4		8.14E+1	8.99E+1	3.77E+2	3.95E+2
8		1.30E+2	1.41E+2	6.60E+2	6.78E+2
10		1.44E+2	1.57E+2	7.34E+2	7.54E+2
20		2.03E+2	2.21E+2	1.04E+3	1.06E+3
30		2.41E+2	2.62E+2	1.23E+3	1.27E+3
Adult male					
	1	5.61E+0	8.50E+0	4.31E+1	5.07E+1
	2	6.20E+0	9.19E+0	4.39E+1	5.29E+1
	4	6.41E+0	1.04E+1	4.41E+1	5.56E+1
	8	6.88E+0	1.23E+1	4.60E+1	5.88E+1
	12	7.98E+0	1.41E+1	5.02E+1	6.21E+1
1	24	1.38E+1	2.09E+1	7.17E+1	7.93E+1
2		3.96E+1	4.72E+1	1.64E+2	1.62E+2
4		1.91E+2	1.89E+2	7.59E+2	6.80E+2
8		4.98E+2	4.55E+2	2.37E+3	1.92E+3
10		5.62E+2	5.12E+2	2.70E+3	2.18E+3
20		7.97E+2	7.22E+2	3.83E+3	3.08E+3
30		9.49E+2	8.59E+2	4.56E+3	3.66E+3
Adult female					
	1	5.82E+0	8.24E+0	4.16E+1	5.10E+1
	2	7.10E+0	9.93E+0	4.22E+1	5.21E+1
	4	8.70E+0	1.19E+1	4.31E+1	5.56E+1
	8	1.08E+1	1.40E+1	4.59E+1	6.14E+1
	12	1.30E+1	1.59E+1	5.05E+1	6.64E+1
1	24	2.14E+1	2.31E+1	7.18E+1	8.74E+1
2		5.28E+1	5.06E+1	1.62E+2	1.81E+2
4		1.94E+2	1.82E+2	7.20E+2	7.50E+2
8		3.96E+2	3.90E+2	2.09E+3	2.04E+3
10		4.43E+2	4.36E+2	2.37E+3	2.31E+3
20		6.24E+2	6.14E+2	3.36E+3	3.27E+3
30		7.41E+2	7.29E+2	3.99E+3	3.89E+3

Table A-3. Inhaled Activity of Type $F^{131}\text{I}$ vs. Count Rate on Ludlum 44-2 (Bq/cpm)

Time post intake		Distance of detector from body/aspect					
		Contact		1 ft		Thyroid: anterior	
d	h	Anterior	Posterior	Anterior	Posterior	Contact	1 ft
Infant							
	1	5.12E+0	9.13E+0	7.49E+1	1.14E+2	2.97E+0	6.22E+1
	2	5.44E+0	9.43E+0	7.97E+1	1.19E+2	3.07E+0	6.60E+1
	4	6.22E+0	1.06E+1	9.03E+1	1.36E+2	3.32E+0	7.43E+01
	8	7.99E+0	1.35E+1	1.13E+2	1.75E+2	3.88E+0	9.23E+1
	12	9.96E+0	1.65E+1	1.38E+2	2.18E+2	4.51E+0	1.12E+2
1	24	1.61E+1	2.39E+1	2.16E+2	3.34E+2	6.81E+0	1.72E+2
2		2.69E+1	3.20E+1	3.56E+2	4.80E+2	1.30E+1	2.83E+2
4		4.22E+1	4.29E+1	5.63E+2	6.65E+2	2.62E+1	4.52E+2
8		7.36E+1	7.26E+1	9.81E+2	1.13E+3	4.88E+1	7.90E+2
10		9.57E+1	9.43E+1	1.27E+3	1.46E+3	6.36E+1	1.03E+3
20		3.55E+2	3.50E+2	4.73E+3	5.43E+3	2.36E+2	3.81E+3
30		1.31E+3	1.29E+3	1.75E+4	2.01E+4	8.72E+2	1.41E+4
1-y-old							
	1	8.46E+0	1.52E+1	8.03E+1	1.36E+2	5.55E+0	6.20E+1
	2	8.92E+0	1.57E+1	8.54E+1	1.43E+2	5.70E+0	6.55E+1
	4	1.02E+1	1.76E+1	9.67E+1	1.62E+2	6.10E+0	7.32E+1
	8	1.32E+1	2.23E+1	1.21E+2	2.07E+2	7.01E+0	8.96E+1
	12	1.65E+1	2.71E+1	1.48E+2	2.55E+2	8.02E+0	1.07E+2
1	24	2.67E+1	3.89E+1	2.30E+2	3.81E+2	1.16E+1	1.62E+2
2		4.31E+1	5.07E+1	3.81E+2	5.25E+2	2.01E+1	2.67E+2
4		6.45E+1	6.61E+1	5.97E+2	7.01E+2	3.58E+1	4.25E+2
8		1.06E+2	1.06E+2	9.92E+2	1.13E+3	6.20E+1	7.12E+2
10		1.35E+2	1.35E+2	1.26E+3	1.43E+3	7.89E+1	9.05E+2
20		4.49E+2	4.49E+2	4.19E+3	4.75E+3	2.63E+2	3.01E+3
30		1.49E+3	1.49E+3	1.39E+4	1.58E+4	8.72E+2	9.99E+3
5-y-old							
	1	1.38E+1	2.43E+1	1.00E+2	1.74E+2	8.59E+0	7.33E+1
	2	1.45E+1	2.49E+1	1.06E+2	1.80E+2	8.80E+0	7.69E+1
	4	1.67E+1	2.80E+1	1.18E+2	2.00E+2	9.32E+0	8.45E+1
	8	2.20E+1	3.57E+1	1.48E+2	2.51E+2	1.05E+1	1.02E+2
	12	2.81E+1	4.37E+1	1.83E+2	3.07E+2	1.19E+1	1.21E+2
1	24	4.77E+1	6.36E+1	2.93E+2	4.52E+2	1.68E+1	1.83E+2
2		7.84E+1	8.30E+1	4.88E+2	6.07E+2	2.84E+1	3.00E+2
4		1.15E+2	1.06E+2	7.47E+2	7.85E+2	4.84E+1	4.71E+2
8		1.80E+2	1.62E+2	1.18E+3	1.20E+3	7.95E+1	7.52E+2
10		2.23E+2	2.01E+2	1.46E+3	1.49E+3	9.89E+1	9.33E+2
20		6.55E+2	5.91E+2	4.30E+3	4.38E+3	2.92E+2	2.75E+3
30		1.94E+3	1.75E+3	1.27E+4	1.29E+4	8.64E+2	8.13E+3

Table A-3 (continued)

Time post intake		Distance of detector from body/aspect					
		Contact		1 ft		Thyroid: anterior	
d	h	Anterior	Posterior	Anterior	Posterior	Contact	1 ft
10-y-old							
	1	1.81E+1	3.31E+1	1.08E+2	1.88E+2	9.75E+0	8.42E+1
	2	1.90E+1	3.41E+1	1.14E+2	1.94E+2	9.92E+0	8.77E+1
	4	2.17E+1	3.88E+1	1.28E+2	2.17E+2	1.04E+1	9.54E+1
	8	2.87E+1	5.06E+1	1.58E+2	2.77E+2	1.15E+1	1.13E+2
	12	3.67E+1	6.35E+1	1.94E+2	3.42E+2	1.27E+1	1.32E+2
1	24	6.23E+1	9.70E+1	3.04E+2	5.16E+2	1.72E+1	1.92E+2
2		1.02E+2	1.30E+2	4.89E+2	6.99E+2	2.77E+1	3.04E+2
4		1.46E+2	1.63E+2	7.20E+2	8.91E+2	4.42E+1	4.59E+2
8		2.17E+2	2.37E+2	1.08E+3	1.30E+3	6.83E+1	6.97E+2
10		2.62E+2	2.86E+2	1.30E+3	1.56E+3	8.28E+1	8.42E+2
20		6.71E+2	7.32E+2	3.33E+3	3.99E+3	2.15E+2	2.17E+3
30		1.73E+3	1.89E+3	8.59E+3	1.03E+4	5.57E+2	5.61E+3
15-y-old							
	1	2.73E+1	4.81E+1	1.39E+2	2.22E+2	1.23E+1	1.08E+2
	2	2.87E+1	5.00E+1	1.47E+2	2.33E+2	1.25E+1	1.12E+2
	4	3.32E+1	5.78E+1	1.65E+2	2.65E+2	1.29E+1	1.21E+2
	8	4.49E+1	7.84E+1	2.07E+2	3.46E+2	1.40E+1	1.39E+2
	12	5.88E+1	1.02E+2	2.53E+2	4.37E+2	1.53E+1	1.59E+2
1	24	1.05E+2	1.71E+2	3.95E+2	6.88E+2	2.00E+1	2.19E+2
2		1.76E+2	2.39E+2	6.18E+2	9.52E+2	3.10E+1	3.25E+2
4		2.50E+2	3.00E+2	8.87E+2	1.21E+3	4.81E+1	4.71E+2
8		3.70E+2	4.33E+2	1.32E+3	1.75E+3	7.36E+1	7.06E+2
10		4.44E+2	5.19E+2	1.59E+3	2.10E+3	8.91E+1	8.52E+2
20		1.12E+3	1.31E+3	4.02E+3	5.29E+3	2.29E+2	2.18E+3
30		2.85E+3	3.32E+3	1.02E+4	1.34E+4	5.85E+2	5.56E+3
Adult male							
	1	2.81E+1	4.58E+1	1.42E+2	2.23E+2	2.70E+1	1.01E+2
	2	3.06E+1	4.90E+1	1.51E+2	2.34E+2	2.26E+1	1.06E+2
	4	3.50E+1	5.73E+1	1.67E+2	2.67E+2	1.77E+1	1.14E+2
	8	4.35E+1	7.72E+1	2.00E+2	3.52E+2	1.38E+1	1.33E+2
	12	5.17E+1	9.94E+1	2.34E+2	4.51E+2	1.22E+1	1.53E+2
1	24	7.16E+1	1.60E+2	3.30E+2	7.37E+2	1.11E+1	2.14E+2
2		9.25E+1	2.15E+2	4.67E+2	1.04E+3	1.19E+1	3.23E+2
4		1.17E+2	2.65E+2	6.36E+2	1.31E+3	1.45E+1	4.70E+2
8		1.71E+2	3.80E+2	9.36E+2	1.89E+3	2.12E+1	7.02E+2
10		2.06E+2	4.56E+2	1.13E+3	2.25E+3	2.56E+1	8.45E+2
20		5.18E+2	1.13E+3	2.82E+3	5.54E+3	6.51E+1	2.13E+3
30		1.31E+3	2.82E+3	7.10E+3	1.38E+4	1.65E+2	5.36E+3
Adult female							
	1	2.66E+1	3.71E+1	1.30E+2	2.02E+2	1.96E+1	1.13E+2
	2	2.80E+1	3.95E+1	1.37E+2	2.15E+2	1.69E+1	1.19E+2
	4	3.09E+1	4.60E+1	1.50E+2	2.46E+2	1.37E+1	1.30E+2
	8	3.68E+1	6.11E+1	1.80E+2	3.22E+2	1.10E+1	1.50E+2
	12	4.24E+1	7.75E+1	2.12E+2	4.09E+2	9.89E+0	1.72E+2
1	24	5.61E+1	1.21E+2	3.03E+2	6.52E+2	9.24E+0	2.34E+2
2		7.29E+1	1.61E+2	4.42E+2	9.15E+2	1.01E+1	3.39E+2
4		9.41E+1	2.00E+2	6.14E+2	1.17E+3	1.24E+1	4.79E+2
8		1.38E+2	2.88E+2	9.07E+2	1.68E+3	1.82E+1	7.11E+2
10		1.66E+2	3.46E+2	1.09E+3	2.01E+3	2.19E+1	8.56E+2
20		4.19E+2	8.61E+2	2.73E+3	4.96E+3	5.59E+1	2.16E+3
30		1.06E+3	2.16E+3	6.87E+3	1.23E+4	1.42E+2	5.44E+3

Table A-4. Ingested Activity of ¹³¹I vs. Count Rate on Ludlum 44-2 (Bq/cpm)

Time post intake		Distance of detector from body/aspect					
d	h	Contact		1 ft		Thyroid: anterior	
		Anterior	Posterior	Anterior	Posterior	Contact	1 ft
Infant							
	1	1.89E+0	3.42E+0	4.31E+1	5.34E+1	6.28E+0	3.99E+1
	2	2.49E+0	3.66E+0	4.73E+1	5.46E+1	5.88E+0	4.33E+1
	4	3.47E+0	4.40E+0	5.59E+1	6.21E+1	5.89E+0	5.00E+1
	8	5.34E+0	6.48E+0	7.53E+1	8.28E+1	6.31E+0	6.43E+1
	12	7.81E+0	9.26E+0	9.65E+1	1.06E+2	6.69E+0	7.88E+1
1	24	1.85E+1	2.01E+1	1.53E+2	1.65E+2	7.52E+0	1.13E+2
2		3.30E+1	3.27E+1	2.03E+2	2.17E+2	8.72E+0	1.43E+2
4		4.21E+1	4.15E+1	2.61E+2	2.79E+2	1.13E+1	1.84E+2
8		6.92E+1	6.83E+1	4.36E+2	4.65E+2	1.91E+1	3.09E+2
10		8.97E+1	8.86E+1	5.66E+2	6.04E+2	2.49E+1	4.01E+2
20		3.33E+2	3.29E+2	2.10E+3	2.24E+3	9.22E+1	1.49E+3
30		1.23E+3	1.22E+3	7.76E+3	8.28E+3	3.41E+2	5.51E+3
1-y-old							
	1	2.84E+0	5.51E+0	4.78E+1	6.20E+1	1.08E+1	4.42E+1
	2	3.86E+0	5.93E+0	5.35E+1	6.31E+1	9.77E+0	4.80E+1
	4	5.50E+0	7.19E+0	6.39E+1	7.16E+1	9.41E+0	5.49E+1
	8	8.60E+0	1.08E+1	8.69E+1	9.57E+1	9.62E+0	6.90E+1
	12	1.28E+1	1.57E+1	1.13E+2	1.23E+2	9.89E+0	8.27E+1
1	24	3.25E+1	3.70E+1	1.83E+2	1.95E+2	1.06E+1	1.13E+2
2		6.35E+1	6.55E+1	2.45E+2	2.57E+2	1.21E+1	1.40E+2
4		7.99E+1	8.15E+1	3.10E+2	3.23E+2	1.53E+1	1.78E+2
8		1.23E+2	1.26E+2	4.92E+2	5.13E+2	2.48E+1	2.84E+2
10		1.56E+2	1.59E+2	6.24E+2	6.51E+2	3.15E+1	3.61E+2
20		5.17E+2	5.28E+2	2.07E+3	2.16E+3	1.05E+2	1.20E+3
30		1.72E+3	1.75E+3	6.88E+3	7.18E+3	3.48E+2	3.99E+3
5-y-old							
	1	3.77E+0	7.79E+0	5.00E+1	6.77E+1	1.79E+1	4.83E+1
	2	5.24E+0	8.61E+0	5.55E+1	6.84E+1	1.53E+1	5.21E+1
	4	7.54E+0	1.05E+1	6.40E+1	7.56E+1	1.39E+1	5.79E+1
	8	1.17E+1	1.57E+1	8.57E+1	9.95E+1	1.32E+1	7.04E+1
	12	1.78E+1	2.33E+1	1.15E+2	1.29E+2	1.30E+1	8.37E+1
1	24	5.09E+1	6.00E+1	2.10E+2	2.13E+2	1.32E+1	1.14E+2
2		1.20E+2	1.19E+2	3.04E+2	2.88E+2	1.46E+1	1.40E+2
4		1.50E+2	1.46E+2	3.78E+2	3.57E+2	1.82E+1	1.74E+2
8		2.14E+2	2.09E+2	5.68E+2	5.38E+2	2.81E+1	2.66E+2
10		2.62E+2	2.56E+2	7.02E+2	6.65E+2	3.49E+1	3.29E+2
20		7.61E+2	7.44E+2	2.06E+3	1.95E+3	1.03E+2	9.71E+2
30		2.24E+3	2.20E+3	6.08E+3	5.77E+3	3.05E+2	2.87E+3

Table A-4 (continued)

Time post intake		Distance of detector from body/aspect					
		Contact		1 ft		Thyroid: anterior	
d	h	Anterior	Posterior	Anterior	Posterior	Contact	1 ft
10-y-old							
	1	4.87E+0	9.76E+0	5.15E+1	7.17E+1	2.61E+1	6.13E+1
	2	7.01E+0	1.08E+1	5.88E+1	7.34E+1	2.06E+1	6.48E+1
	4	1.04E+1	1.34E+1	6.90E+1	8.27E+1	1.70E+1	7.02E+1
	8	1.66E+1	2.05E+1	9.33E+1	1.12E+2	1.45E+1	8.20E+1
	12	2.54E+1	3.12E+1	1.26E+2	1.50E+2	1.35E+1	9.37E+1
1	24	7.80E+1	9.17E+1	2.39E+2	2.69E+2	1.27E+1	1.18E+2
2		2.17E+2	2.30E+2	3.55E+2	3.83E+2	1.37E+1	1.39E+2
4		2.83E+2	2.91E+2	4.37E+2	4.69E+2	1.65E+1	1.70E+2
8		3.81E+2	3.89E+2	6.25E+2	6.70E+2	2.43E+1	2.47E+2
10		4.47E+2	4.55E+2	7.50E+2	8.02E+2	2.94E+1	2.99E+2
20		1.07E+3	1.09E+3	1.90E+3	2.03E+3	7.63E+1	7.70E+2
30		2.72E+3	2.74E+3	4.87E+3	5.20E+3	1.97E+2	1.99E+3
15-y-old							
	1	6.81E+0	1.32E+1	5.31E+1	7.88E+1	3.92E+1	7.20E+1
	2	9.90E+0	1.51E+1	6.17E+1	8.18E+1	2.85E+1	7.56E+1
	4	1.50E+1	1.91E+1	7.38E+1	9.37E+1	2.12E+1	8.04E+1
	8	2.41E+1	2.96E+1	1.02E+2	1.30E+2	1.63E+1	8.95E+1
	12	3.74E+1	4.57E+1	1.40E+2	1.79E+2	1.43E+1	9.79E+1
1	24	1.22E+2	1.44E+2	2.78E+2	3.49E+2	1.29E+1	1.15E+2
2		3.90E+2	4.25E+2	4.29E+2	5.29E+2	1.37E+1	1.31E+2
4		5.13E+2	5.42E+2	5.31E+2	6.49E+2	1.65E+1	1.59E+2
8		6.69E+2	6.99E+2	7.56E+2	9.19E+2	2.41E+1	2.31E+2
10		7.76E+2	8.07E+2	9.03E+2	1.10E+3	2.91E+1	2.79E+2
20		1.78E+3	1.84E+3	2.25E+3	2.71E+3	7.48E+1	7.11E+02
30		4.38E+3	4.51E+3	5.70E+3	6.86E+3	1.91E+2	1.82E+3
Adult male							
	1	8.85E+0	1.25E+1	6.57E+1	7.59E+1	1.51E+1	6.71E+1
	2	1.26E+1	1.43E+1	7.56E+1	7.90E+1	1.10E+1	7.19E+1
	4	1.86E+1	1.79E+1	8.78E+1	8.98E+1	7.55E+0	7.79E+1
	8	2.81E+1	2.69E+1	1.11E+2	1.23E+2	5.30E+0	8.84E+1
	12	3.96E+1	3.93E+1	1.37E+2	1.67E+2	4.50E+0	9.82E+1
1	24	8.31E+1	9.50E+1	2.00E+2	3.13E+2	3.91E+0	1.18E+2
2		1.33E+2	1.77E+2	2.53E+2	4.59E+2	4.09E+0	1.36E+2
4		1.65E+2	2.20E+2	3.08E+2	5.63E+2	4.93E+0	1.65E+2
8		2.34E+2	3.06E+2	4.43E+2	7.97E+2	7.19E+0	2.38E+2
10		2.79E+2	3.62E+2	5.31E+2	9.49E+2	8.67E+0	2.87E+2
20		6.79E+2	8.58E+2	1.32E+3	2.30E+3	2.21E+1	7.22E+2
30		1.68E+3	2.09E+3	3.31E+3	5.69E+3	5.60E+1	1.82E+3
Adult female							
	1	8.29E+0	1.04E+1	6.24E+1	6.86E+1	1.45E+1	6.46E+1
	2	1.14E+1	1.25E+1	6.97E+1	7.37E+1	1.00E+1	7.22E+1
	4	1.63E+1	1.63E+1	7.88E+1	8.56E+1	6.66E+0	8.05E+1
	8	2.47E+1	2.47E+1	9.87E+1	1.17E+2	4.60E+0	9.15E+1
	12	3.56E+1	3.63E+1	1.22E+2	1.58E+2	3.89E+0	1.01E+2
1	24	8.03E+1	8.95E+1	1.82E+2	2.86E+2	3.36E+0	1.20E+2
2		1.38E+2	1.70E+2	2.32E+2	4.11E+2	3.51E+0	1.38E+2
4		1.71E+2	2.12E+2	2.82E+2	5.03E+2	4.23E+0	1.67E+2
8		2.41E+2	2.93E+2	4.06E+2	7.13E+2	6.17E+0	2.41E+2
10		2.87E+2	3.46E+2	4.87E+2	8.49E+2	7.44E+0	2.91E+2
20		6.94E+2	8.16E+2	1.21E+3	2.07E+3	1.89E+1	7.32E+2
30		1.71E+3	1.98E+3	3.04E+3	5.11E+3	4.81E+1	1.85E+3

Table A-5. Intake of ¹³⁷Cs vs. Count Rate on Ludlum 44-2 (Bq/cpm)

Time post intake		Pathway/distance of detector from body/aspect							
		Inhalation: Type F			Ingestion				
d	h	Contact		1 ft		Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	8.03E+0	1.35E+1	1.13E+2	1.63E+2	2.94E+0	5.15E+0	6.49E+1	7.75E+1
	2	8.32E+0	1.34E+1	1.16E+2	1.63E+2	3.74E+0	5.22E+0	6.81E+1	7.60E+1
	4	8.96E+0	1.39E+1	1.22E+2	1.65E+2	4.57E+0	5.43E+0	7.09E+1	7.55E+1
	8	1.02E+1	1.51E+1	1.31E+2	1.70E+2	5.18E+0	5.81E+0	7.33E+1	7.61E+1
	12	1.14E+1	1.60E+1	1.40E+2	1.75E+2	5.57E+0	6.10E+0	7.48E+1	7.67E+1
1	24	1.43E+1	1.79E+1	1.62E+2	1.88E+2	6.23E+0	6.59E+0	7.79E+1	7.85E+1
2		1.78E+1	1.98E+1	1.95E+2	2.07E+2	6.70E+0	7.00E+0	8.17E+1	8.19E+1
4		2.12E+1	2.21E+1	2.31E+2	2.32E+2	7.32E+0	7.64E+0	8.90E+1	8.92E+1
8		2.56E+1	2.64E+1	2.78E+2	2.78E+2	8.71E+0	9.09E+0	1.06E+2	1.06E+2
10		2.80E+1	2.88E+1	3.04E+2	3.03E+2	9.51E+0	9.92E+0	1.16E+2	1.16E+2
20		4.35E+1	4.47E+1	4.72E+2	4.71E+2	1.48E+1	1.54E+1	1.79E+2	1.80E+2
30		6.77E+1	6.97E+1	7.35E+2	7.33E+2	2.30E+1	2.40E+1	2.79E+2	2.80E+2
1-y-old									
	1	1.29E+1	2.20E+1	1.20E+2	1.89E+2	4.32E+0	8.05E+0	7.08E+1	8.99E+1
	2	1.33E+1	2.19E+1	1.25E+2	1.89E+2	5.66E+0	8.32E+0	7.67E+1	8.83E+1
	4	1.44E+1	2.28E+1	1.32E+2	1.92E+2	7.12E+0	8.77E+0	8.13E+1	8.78E+1
	8	1.68E+1	2.51E+1	1.45E+2	2.00E+2	8.26E+0	9.47E+0	8.45E+1	8.84E+1
	12	1.89E+1	2.70E+1	1.56E+2	2.07E+2	9.01E+0	1.00E+1	8.66E+1	8.92E+1
1	24	2.42E+1	3.07E+1	1.86E+2	2.23E+2	1.03E+1	1.09E+1	9.07E+1	9.15E+1
2		3.04E+1	3.42E+1	2.29E+2	2.46E+2	1.13E+1	1.17E+1	9.60E+1	9.62E+1
4		3.68E+1	3.88E+1	2.80E+2	2.80E+2	1.26E+1	1.31E+1	1.07E+2	1.07E+2
8		4.62E+1	4.82E+1	3.52E+2	3.48E+2	1.56E+1	1.62E+1	1.32E+2	1.32E+2
10		5.14E+1	5.36E+1	3.92E+2	3.88E+2	1.73E+1	1.80E+1	1.47E+2	1.47E+2
20		8.76E+1	9.13E+1	6.67E+2	6.61E+2	2.95E+1	3.06E+1	2.50E+2	2.51E+2
30		1.49E+2	1.56E+2	1.14E+3	1.13E+3	5.03E+1	5.22E+1	4.26E+2	4.27E+2
5-y-old									
	1	2.06E+1	3.36E+1	1.54E+2	2.45E+2	5.68E+0	1.07E+1	7.36E+1	9.63E+1
	2	2.13E+1	3.38E+1	1.61E+2	2.47E+2	7.68E+0	1.14E+1	8.16E+1	9.52E+1
	4	2.33E+1	3.58E+1	1.71E+2	2.53E+2	9.96E+0	1.23E+1	8.85E+1	9.58E+1
	8	2.76E+1	4.04E+1	1.89E+2	2.66E+2	1.18E+1	1.34E+1	9.38E+1	9.81E+1
	12	3.16E+1	4.42E+1	2.06E+2	2.77E+2	1.30E+1	1.42E+1	9.73E+1	1.00E+2
1	24	4.12E+1	5.16E+1	2.48E+2	3.01E+2	1.50E+1	1.55E+1	1.03E+2	1.04E+2
2		5.16E+1	5.78E+1	3.06E+2	3.31E+2	1.64E+1	1.66E+1	1.09E+2	1.09E+2
4		6.12E+1	6.45E+1	3.67E+2	3.70E+2	1.80E+1	1.82E+1	1.20E+2	1.19E+2
8		7.38E+1	7.70E+1	4.44E+2	4.42E+2	2.15E+1	2.16E+1	1.42E+2	1.42E+2
10		8.02E+1	8.37E+1	4.83E+2	4.81E+2	2.33E+1	2.35E+1	1.55E+2	1.54E+2
20		1.17E+2	1.22E+2	7.06E+2	7.03E+2	3.41E+1	3.44E+1	2.26E+2	2.26E+2
30		1.63E+2	1.70E+2	9.82E+2	9.77E+2	4.75E+1	4.78E+1	3.15E+2	3.14E+2

Table A-5 (continued)

Time post intake		Pathway/distance of detector from body/aspect							
		Inhalation: Type F				Ingestion			
d	h	Contact		1 ft		Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
10-y-old									
	1	2.73E+1	4.43E+1	1.66E+2	2.65E+2	7.29E+0	1.32E+1	7.63E+1	1.01E+2
	2	2.80E+1	4.45E+1	1.75E+2	2.68E+2	9.97E+0	1.43E+1	8.67E+1	1.02E+2
	4	3.07E+1	4.74E+1	1.88E+2	2.78E+2	1.31E+1	1.56E+1	9.57E+1	1.04E+2
	8	3.65E+1	5.39E+1	2.09E+2	2.96E+2	1.56E+1	1.74E+1	1.03E+2	1.07E+2
	12	4.21E+1	5.96E+1	2.29E+2	3.11E+2	1.73E+1	1.87E+1	1.07E+2	1.09E+2
1	24	5.56E+1	7.06E+1	2.79E+2	3.42E+2	2.04E+1	2.09E+1	1.14E+2	1.14E+2
2		7.01E+1	7.95E+1	3.48E+2	3.77E+2	2.23E+1	2.24E+1	1.21E+2	1.19E+2
4		8.26E+1	8.82E+1	4.16E+2	4.19E+2	2.42E+1	2.43E+1	1.31E+2	1.30E+2
8		9.63E+1	1.02E+2	4.87E+2	4.84E+2	2.79E+1	2.80E+1	1.51E+2	1.49E+2
10		1.02E+2	1.08E+2	5.17E+2	5.15E+2	2.96E+1	2.97E+1	1.60E+2	1.58E+2
20		1.29E+2	1.36E+2	6.54E+2	6.51E+2	3.75E+1	3.76E+1	2.03E+2	2.00E+2
30		1.53E+2	1.62E+2	7.78E+2	7.74E+2	4.46E+1	4.47E+1	2.41E+2	2.38E+2
15-y-old									
	1	4.03E+1	6.32E+1	2.05E+2	3.15E+2	9.75E+0	1.71E+1	7.96E+1	1.09E+2
	2	4.14E+1	6.34E+1	2.16E+2	3.19E+2	1.35E+1	1.87E+1	9.20E+1	1.12E+2
	4	4.55E+1	6.74E+1	2.33E+2	3.33E+2	1.79E+1	2.05E+1	1.03E+2	1.15E+2
	8	5.45E+1	7.66E+1	2.63E+2	3.61E+2	2.12E+1	2.29E+1	1.12E+2	1.20E+2
	12	6.31E+1	8.44E+1	2.90E+2	3.84E+2	2.34E+1	2.46E+1	1.18E+2	1.23E+2
1	24	8.32E+1	9.94E+1	3.56E+2	4.28E+2	2.73E+1	2.75E+1	1.28E+2	1.30E+2
2		1.03E+2	1.11E+2	4.36E+2	4.71E+2	2.97E+1	2.95E+1	1.35E+2	1.36E+2
4		1.17E+2	1.19E+2	5.03E+2	5.10E+2	3.16E+1	3.13E+1	1.43E+2	1.44E+2
8		1.26E+2	1.28E+2	5.47E+2	5.48E+2	3.38E+1	3.36E+1	1.54E+2	1.54E+2
10		1.29E+2	1.31E+2	5.60E+2	5.60E+2	3.46E+1	3.43E+1	1.58E+2	1.58E+2
20		1.40E+2	1.42E+2	6.09E+2	6.09E+2	3.76E+1	3.73E+1	1.71E+2	1.72E+2
30		1.51E+2	1.53E+2	6.56E+2	6.57E+2	4.06E+1	4.02E+1	1.85E+2	1.85E+2
Adult male									
	1	4.02E+1	6.27E+1	2.03E+2	3.03E+2	1.28E+1	1.71E+1	9.54E+1	9.76E+1
	2	4.36E+1	6.52E+1	2.17E+2	3.10E+2	1.76E+1	1.88E+1	1.10E+2	1.02E+2
	4	4.97E+1	7.10E+1	2.37E+2	3.26E+2	2.35E+1	2.11E+1	1.24E+2	1.08E+2
	8	6.10E+1	8.18E+1	2.69E+2	3.51E+2	2.86E+1	2.44E+1	1.37E+2	1.15E+2
	12	7.16E+1	9.10E+1	2.98E+2	3.71E+2	3.23E+1	2.70E+1	1.46E+2	1.20E+2
1	24	9.55E+1	1.08E+2	3.70E+2	4.09E+2	3.88E+1	3.16E+1	1.61E+2	1.29E+2
2		1.16E+2	1.18E+2	4.56E+2	4.44E+2	4.26E+1	3.42E+1	1.71E+2	1.35E+2
4		1.27E+2	1.25E+2	5.24E+2	4.75E+2	4.48E+1	3.60E+1	1.79E+2	1.42E+2
8		1.35E+2	1.33E+2	5.61E+2	5.02E+2	4.73E+1	3.80E+1	1.89E+2	1.50E+2
10		1.38E+2	1.35E+2	5.72E+2	5.11E+2	4.81E+1	3.87E+1	1.93E+2	1.53E+2
20		1.48E+2	1.44E+2	6.12E+2	5.47E+2	5.16E+1	4.14E+1	2.06E+2	1.63E+2
30		1.57E+2	1.54E+2	6.52E+2	5.83E+2	5.49E+1	4.41E+1	2.20E+2	1.74E+2
Adult female									
	1	3.87E+1	5.17E+1	1.94E+2	2.75E+2	1.18E+1	1.44E+1	9.06E+1	1.04E+2
	2	4.11E+1	5.40E+1	2.05E+2	2.85E+2	1.56E+1	1.68E+1	1.03E+2	1.06E+2
	4	4.59E+1	5.95E+1	2.23E+2	3.02E+2	2.03E+1	1.95E+1	1.15E+2	1.10E+2
	8	5.56E+1	6.99E+1	2.53E+2	3.30E+2	2.50E+1	2.28E+1	1.26E+2	1.18E+2
	12	6.49E+1	7.91E+1	2.81E+2	3.53E+2	2.85E+1	2.53E+1	1.34E+2	1.24E+2
1	24	8.72E+1	9.70E+1	3.52E+2	3.97E+2	3.51E+1	2.98E+1	1.47E+2	1.33E+2
2		1.10E+2	1.09E+2	4.42E+2	4.36E+2	3.88E+1	3.24E+1	1.55E+2	1.40E+2
4		1.25E+2	1.17E+2	5.14E+2	4.68E+2	4.09E+1	3.40E+1	1.63E+2	1.47E+2
8		1.34E+2	1.23E+2	5.52E+2	4.95E+2	4.31E+1	3.59E+1	1.72E+2	1.55E+2
10		1.36E+2	1.25E+2	5.62E+2	5.04E+2	4.39E+1	3.65E+1	1.75E+2	1.58E+2
20		1.46E+2	1.34E+2	6.02E+2	5.40E+2	4.70E+1	3.91E+1	1.88E+2	1.69E+2
30		1.55E+2	1.43E+2	6.42E+2	5.75E+2	5.01E+1	4.17E+1	2.00E+2	1.80E+2

Table A-6. Inhaled Activity of ¹⁹²Ir vs. Count Rate on Ludlum 44-2 (Bq/cpm)

Time post intake		Pathway/distance of detector from chest/aspect							
		Inhalation: Type <i>F</i>				Inhalation: Type <i>M</i>			
d	h	Contact		1 ft		Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	2.37E+0	4.27E+0	3.19E+1	4.86E+1	2.43E+0	3.92E+0	3.12E+1	4.84E+1
	2	2.55E+0	4.50E+0	3.28E+1	4.88E+1	2.69E+0	4.15E+0	3.21E+1	4.79E+1
	4	2.80E+0	4.82E+0	3.43E+1	5.00E+1	2.94E+0	4.38E+0	3.33E+1	4.85E+1
	8	3.21E+0	5.33E+0	3.71E+1	5.26E+1	3.23E+0	4.67E+0	3.56E+1	5.07E+1
	12	3.64E+0	5.81E+0	4.03E+1	5.53E+1	3.56E+0	4.96E+0	3.85E+1	5.32E+1
1	24	4.94E+0	7.02E+0	5.12E+1	6.44E+1	4.73E+0	5.88E+0	5.08E+1	6.45E+1
2		7.22E+0	8.69E+0	7.63E+1	8.56E+1	7.21E+0	7.46E+0	8.88E+1	1.00E+2
4		9.65E+0	1.03E+1	1.11E+2	1.14E+2	1.02E+1	9.06E+0	1.71E+2	1.69E+2
8		1.11E+1	1.15E+1	1.32E+2	1.32E+2	1.19E+1	1.02E+1	2.18E+2	2.07E+2
10		1.16E+1	1.21E+1	1.38E+2	1.38E+2	1.24E+1	1.06E+1	2.27E+2	2.16E+2
20		1.40E+1	1.46E+1	1.67E+2	1.67E+2	1.52E+1	1.31E+1	2.75E+2	2.62E+2
30		1.64E+1	1.70E+1	1.95E+2	1.95E+2	1.83E+1	1.59E+1	3.28E+2	3.12E+2
1-y-old									
	1	3.98E+0	7.35E+0	3.42E+1	5.68E+1	4.17E+0	6.61E+0	3.28E+1	5.57E+1
	2	4.31E+0	7.83E+0	3.54E+1	5.72E+1	4.65E+0	7.06E+0	3.42E+1	5.51E+1
	4	4.78E+0	8.46E+0	3.71E+1	5.88E+1	5.10E+0	7.46E+0	3.58E+1	5.62E+1
	8	5.58E+0	9.48E+0	4.05E+1	6.24E+1	5.60E+0	7.90E+0	3.85E+1	5.93E+1
	12	6.39E+0	1.04E+1	4.41E+1	6.57E+1	6.15E+0	8.35E+0	4.18E+1	6.25E+1
1	24	8.77E+0	1.27E+1	5.68E+1	7.66E+1	7.97E+0	9.64E+0	5.56E+1	7.55E+1
2		1.26E+1	1.54E+1	8.57E+1	1.00E+2	1.14E+1	1.16E+1	9.66E+1	1.14E+2
4		1.64E+1	1.78E+1	1.25E+2	1.31E+2	1.50E+1	1.35E+1	1.79E+2	1.81E+2
8		1.88E+1	2.00E+1	1.48E+2	1.51E+2	1.71E+1	1.50E+1	2.25E+2	2.17E+2
10		1.96E+1	2.09E+1	1.56E+2	1.58E+2	1.78E+1	1.57E+1	2.35E+2	2.26E+2
20		2.37E+1	2.52E+1	1.88E+2	1.91E+2	2.18E+1	1.93E+1	2.84E+2	2.73E+2
30		2.77E+1	2.95E+1	2.20E+2	2.24E+2	2.63E+1	2.33E+1	3.38E+2	3.26E+2
5-y-old									
	1	6.53E+0	1.15E+1	4.29E+1	7.55E+1	6.80E+0	9.73E+0	4.09E+1	7.15E+1
	2	7.10E+0	1.24E+1	4.46E+1	7.58E+1	7.55E+0	1.04E+1	4.29E+1	7.07E+1
	4	7.96E+0	1.36E+1	4.70E+1	7.75E+1	8.23E+0	1.10E+1	4.50E+1	7.18E+1
	8	9.48E+0	1.56E+1	5.16E+1	8.17E+1	8.99E+0	1.16E+1	4.85E+1	7.53E+1
	12	1.10E+1	1.74E+1	5.67E+1	8.60E+1	9.77E+0	1.22E+1	5.29E+1	7.93E+1
1	24	1.55E+1	2.17E+1	7.38E+1	9.98E+1	1.21E+1	1.37E+1	7.02E+1	9.48E+1
2		2.20E+1	2.62E+1	1.10E+2	1.28E+2	1.60E+1	1.57E+1	1.16E+2	1.35E+2
4		2.78E+1	2.98E+1	1.56E+2	1.62E+2	1.94E+1	1.75E+1	1.94E+2	1.95E+2
8		3.16E+1	3.33E+1	1.84E+2	1.85E+2	2.18E+1	1.94E+1	2.34E+2	2.28E+2
10		3.31E+1	3.48E+1	1.92E+2	1.94E+2	2.27E+1	2.02E+1	2.44E+2	2.37E+2
20		3.99E+1	4.20E+1	2.33E+2	2.35E+2	2.79E+1	2.49E+1	2.96E+2	2.88E+2
30		4.66E+1	4.90E+1	2.72E+2	2.74E+2	3.38E+1	3.04E+1	3.53E+2	3.44E+2

Table A-6 (continued)

Time post intake		Pathway/distance of detector from chest/aspect							
		Inhalation: Type <i>F</i>				Inhalation: Type <i>M</i>			
d	h	Contact		1 ft		Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
10-y-old									
	1	8.90E+0	1.63E+1	4.74E+1	8.12E+1	9.41E+0	1.35E+1	4.40E+1	7.64E+1
	2	9.68E+0	1.77E+1	4.95E+1	8.24E+1	1.04E+1	1.46E+1	4.67E+1	7.66E+1
	4	1.09E+1	1.96E+1	5.23E+1	8.60E+1	1.14E+1	1.56E+1	4.93E+1	7.92E+1
	8	1.31E+1	2.26E+1	5.75E+1	9.29E+1	1.25E+1	1.65E+1	5.33E+1	8.46E+1
	12	1.54E+1	2.54E+1	6.33E+1	9.92E+1	1.36E+1	1.73E+1	5.83E+1	8.98E+1
1	24	2.19E+1	3.16E+1	8.30E+1	1.17E+2	1.68E+1	1.93E+1	7.80E+1	1.07E+2
2		3.13E+1	3.77E+1	1.25E+2	1.51E+2	2.17E+1	2.18E+1	1.30E+2	1.52E+2
4		3.94E+1	4.25E+1	1.78E+2	1.91E+2	2.61E+1	2.40E+1	2.14E+2	2.15E+2
8		4.48E+1	4.73E+1	2.09E+2	2.19E+2	2.91E+1	2.64E+1	2.58E+2	2.50E+2
10		4.68E+1	4.94E+1	2.19E+2	2.29E+2	3.04E+1	2.76E+1	2.70E+2	2.61E+2
20		5.65E+1	5.97E+1	2.65E+2	2.77E+2	3.75E+1	3.41E+1	3.27E+2	3.17E+2
30		6.60E+1	6.97E+1	3.11E+2	3.24E+2	4.56E+1	4.16E+1	3.91E+2	3.80E+2
15-y-old									
	1	1.35E+1	2.40E+1	6.14E+1	1.01E+2	1.35E+1	1.86E+1	5.66E+1	9.17E+1
	2	1.47E+1	2.60E+1	6.47E+1	1.03E+2	1.49E+1	1.99E+1	6.04E+1	9.30E+1
	4	1.67E+1	2.88E+1	6.89E+1	1.08E+2	1.62E+1	2.11E+1	6.41E+1	9.61E+1
	8	2.04E+1	3.34E+1	7.66E+1	1.17E+2	1.76E+1	2.23E+1	6.91E+1	1.02E+2
	12	2.42E+1	3.75E+1	8.47E+1	1.26E+2	1.89E+1	2.32E+1	7.50E+1	1.07E+2
1	24	3.43E+1	4.62E+1	1.11E+2	1.48E+2	2.23E+1	2.52E+1	9.68E+1	1.25E+2
2		4.71E+1	5.35E+1	1.60E+2	1.84E+2	2.68E+1	2.75E+1	1.46E+2	1.62E+2
4		5.71E+1	5.89E+1	2.18E+2	2.22E+2	3.06E+1	2.96E+1	2.10E+2	2.05E+2
8		6.44E+1	6.53E+1	2.53E+2	2.51E+2	3.39E+1	3.26E+1	2.44E+2	2.32E+2
10		6.73E+1	6.82E+1	2.65E+2	2.63E+2	3.55E+1	3.41E+1	2.55E+2	2.42E+2
20		8.12E+1	8.23E+1	3.20E+2	3.18E+2	4.39E+1	4.21E+1	3.11E+2	2.95E+2
30		9.48E+1	9.62E+1	3.75E+2	3.72E+2	5.37E+1	5.14E+1	3.74E+2	3.55E+2
Adult male									
	1	1.31E+1	2.17E+1	6.01E+1	1.01E+2	9.63E+0	1.61E+1	5.17E+1	7.78E+1
	2	1.46E+1	2.37E+1	6.24E+1	1.04E+2	1.09E+1	1.75E+1	5.40E+1	8.21E+1
	4	1.63E+1	2.64E+1	6.52E+1	1.09E+2	1.19E+1	1.88E+1	5.59E+1	8.66E+1
	8	1.89E+1	3.05E+1	7.12E+1	1.18E+2	1.27E+1	2.00E+1	5.93E+1	9.12E+1
	12	2.14E+1	3.39E+1	7.82E+1	1.25E+2	1.35E+1	2.08E+1	6.42E+1	9.49E+1
1	24	2.80E+1	4.11E+1	1.02E+2	1.44E+2	1.57E+1	2.28E+1	8.32E+1	1.07E+2
2		3.61E+1	4.83E+1	1.51E+2	1.79E+2	1.86E+1	2.54E+1	1.26E+2	1.38E+2
4		4.27E+1	5.44E+1	2.08E+2	2.19E+2	2.11E+1	2.80E+1	1.82E+2	1.76E+2
8		4.80E+1	6.06E+1	2.43E+2	2.49E+2	2.33E+1	3.08E+1	2.12E+2	2.00E+2
10		5.01E+1	6.34E+1	2.54E+2	2.61E+2	2.44E+1	3.22E+1	2.21E+2	2.09E+2
20		6.06E+1	7.65E+1	3.08E+2	3.15E+2	3.01E+1	3.95E+1	2.70E+2	2.55E+2
30		7.08E+1	8.94E+1	3.61E+2	3.69E+2	3.66E+1	4.79E+1	3.25E+2	3.06E+2
Adult female									
	1	1.27E+1	1.80E+1	5.53E+1	9.02E+1	1.03E+1	1.20E+1	5.00E+1	9.08E+1
	2	1.40E+1	2.02E+1	5.74E+1	9.45E+1	1.15E+1	1.32E+1	5.23E+1	9.31E+1
	4	1.59E+1	2.29E+1	6.06E+1	1.00E+2	1.27E+1	1.43E+1	5.48E+1	9.74E+1
	8	1.88E+1	2.71E+1	6.70E+1	1.08E+2	1.40E+1	1.52E+1	5.94E+1	1.04E+2
	12	2.16E+1	3.06E+1	7.41E+1	1.15E+2	1.50E+1	1.58E+1	6.50E+1	1.09E+2
1	24	2.86E+1	3.76E+1	9.75E+1	1.33E+2	1.74E+1	1.70E+1	8.56E+1	1.25E+2
2		3.71E+1	4.36E+1	1.44E+2	1.66E+2	2.04E+1	1.83E+1	1.32E+2	1.62E+2
4		4.40E+1	4.83E+1	1.99E+2	2.05E+2	2.29E+1	1.97E+1	1.94E+2	2.11E+2
8		4.94E+1	5.37E+1	2.31E+2	2.34E+2	2.53E+1	2.16E+1	2.26E+2	2.40E+2
10		5.16E+1	5.61E+1	2.42E+2	2.45E+2	2.64E+1	2.26E+1	2.36E+2	2.50E+2
20		6.23E+1	6.77E+1	2.93E+2	2.96E+2	3.24E+1	2.78E+1	2.86E+2	3.04E+2
30		7.28E+1	7.91E+1	3.43E+2	3.46E+2	3.93E+1	3.39E+1	3.44E+2	3.64E+2

Table A-7. Intake of ¹⁹²Ir vs. Count Rate on Ludlum 44-2 (Bq/cpm)

Time post intake		Pathway/distance of detector from body/aspect							
		Inhalation: Type S				Ingestion			
d	h	Contact		1 ft		Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	2.44E+0	3.89E+0	3.11E+1	4.84E+1	7.26E-1	1.33E+0	1.74E+1	2.20E+1
	2	2.71E+0	4.12E+0	3.20E+1	4.78E+1	8.43E-1	1.32E+0	1.77E+1	2.12E+1
	4	2.95E+0	4.33E+0	3.31E+1	4.84E+1	9.16E-1	1.36E+0	1.78E+1	2.12E+1
	8	3.23E+0	4.60E+0	3.54E+1	5.05E+1	9.87E-1	1.51E+0	1.82E+1	2.19E+1
	12	3.55E+0	4.88E+0	3.83E+1	5.30E+1	1.10E+0	1.67E+0	1.92E+1	2.30E+1
1	24	4.70E+0	5.77E+0	5.07E+1	6.44E+1	1.70E+0	2.36E+0	2.54E+1	2.94E+1
2		7.19E+0	7.32E+0	9.04E+1	1.02E+2	4.28E+0	5.37E+0	5.58E+1	6.26E+1
4		1.02E+1	8.84E+0	1.81E+2	1.78E+2	2.34E+1	2.78E+1	3.08E+2	3.36E+2
8		1.17E+1	9.81E+0	2.33E+2	2.19E+2	8.35E+1	9.94E+1	1.49E+3	1.53E+3
10		1.22E+1	1.02E+1	2.43E+2	2.27E+2	9.09E+1	1.08E+2	1.66E+3	1.70E+3
20		1.45E+1	1.22E+1	2.90E+2	2.72E+2	1.11E+2	1.32E+2	2.03E+3	2.08E+3
30		1.71E+1	1.44E+1	3.42E+2	3.20E+2	1.30E+2	1.54E+2	2.38E+3	2.43E+3
1-y-old									
	1	4.20E+0	6.54E+0	3.26E+1	5.56E+1	1.10E+0	2.14E+0	1.85E+1	2.48E+1
	2	4.70E+0	6.98E+0	3.41E+1	5.49E+1	1.32E+0	2.12E+0	1.90E+1	2.38E+1
	4	5.13E+0	7.36E+0	3.57E+1	5.60E+1	1.46E+0	2.21E+0	1.92E+1	2.39E+1
	8	5.61E+0	7.76E+0	3.83E+1	5.90E+1	1.58E+0	2.48E+0	1.97E+1	2.50E+1
	12	6.12E+0	8.16E+0	4.16E+1	6.22E+1	1.78E+0	2.78E+0	2.10E+1	2.64E+1
1	24	7.88E+0	9.37E+0	5.54E+1	7.53E+1	2.79E+0	4.07E+0	2.82E+1	3.39E+1
2		1.12E+1	1.13E+1	9.78E+1	1.15E+2	7.29E+0	9.67E+0	6.35E+1	7.29E+1
4		1.47E+1	1.30E+1	1.88E+2	1.88E+2	4.57E+1	5.68E+1	3.88E+2	4.32E+2
8		1.65E+1	1.42E+1	2.36E+2	2.25E+2	2.60E+2	3.06E+2	3.21E+3	3.33E+3
10		1.71E+1	1.48E+1	2.46E+2	2.34E+2	2.92E+2	3.43E+2	3.80E+3	3.89E+3
20		2.03E+1	1.76E+1	2.92E+2	2.78E+2	3.59E+2	4.20E+2	4.70E+3	4.81E+3
30		2.39E+1	2.07E+1	3.43E+2	3.26E+2	4.20E+2	4.91E+2	5.51E+3	5.63E+3
5-y-old									
	1	6.83E+0	9.57E+0	4.06E+1	7.10E+1	1.49E+0	2.94E+0	1.90E+1	2.66E+1
	2	7.61E+0	1.02E+1	4.27E+1	7.02E+1	1.81E+0	2.97E+0	1.96E+1	2.57E+1
	4	8.26E+0	1.08E+1	4.48E+1	7.12E+1	2.02E+0	3.12E+0	1.98E+1	2.58E+1
	8	8.94E+0	1.13E+1	4.82E+1	7.47E+1	2.18E+0	3.52E+0	2.05E+1	2.70E+1
	12	9.64E+0	1.18E+1	5.26E+1	7.86E+1	2.47E+0	4.00E+0	2.20E+1	2.86E+1
1	24	1.19E+1	1.31E+1	6.98E+1	9.42E+1	4.02E+0	6.05E+0	3.01E+1	3.72E+1
2		1.54E+1	1.49E+1	1.17E+2	1.36E+2	1.10E+1	1.49E+1	6.89E+1	8.08E+1
4		1.86E+1	1.65E+1	1.98E+2	1.98E+2	6.96E+1	8.76E+1	4.25E+2	4.80E+2
8		2.05E+1	1.80E+1	2.39E+2	2.30E+2	3.66E+2	4.40E+2	3.55E+3	3.61E+3
10		2.13E+1	1.87E+1	2.48E+2	2.39E+2	4.10E+2	4.90E+2	4.20E+3	4.20E+3
20		2.53E+1	2.22E+1	2.94E+2	2.84E+2	5.02E+2	6.00E+2	5.20E+3	5.19E+3
30		2.97E+1	2.62E+1	3.46E+2	3.34E+2	5.87E+2	7.02E+2	6.09E+3	6.07E+3

Table A-7 (continued)

Time post intake		Pathway/distance of detector from body/aspect							
		Inhalation: Type S				Ingestion			
d	h	Contact		1 ft		Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
10-y-old									
	1	9.47E+0	1.32E+1	4.37E+1	7.59E+1	1.96E+0	3.85E+0	1.93E+1	2.81E+1
	2	1.05E+1	1.43E+1	4.64E+1	7.60E+1	2.46E+0	3.92E+0	2.01E+1	2.70E+1
	4	1.14E+1	1.52E+1	4.90E+1	7.85E+1	2.79E+0	4.14E+0	2.02E+1	2.70E+1
	8	1.24E+1	1.60E+1	5.28E+1	8.38E+1	3.04E+0	4.69E+0	2.08E+1	2.84E+1
	12	1.34E+1	1.67E+1	5.78E+1	8.88E+1	3.48E+0	5.38E+0	2.23E+1	3.03E+1
1	24	1.64E+1	1.84E+1	7.74E+1	1.06E+2	5.79E+0	8.32E+0	3.11E+1	3.99E+1
2		2.09E+1	2.07E+1	1.30E+2	1.51E+2	1.63E+1	2.09E+1	7.23E+1	8.78E+1
4		2.48E+1	2.26E+1	2.18E+2	2.16E+2	1.04E+2	1.22E+2	4.51E+2	5.24E+2
8		2.73E+1	2.45E+1	2.61E+2	2.50E+2	5.04E+2	5.66E+2	3.89E+3	3.94E+3
10		2.83E+1	2.54E+1	2.72E+2	2.59E+2	5.59E+2	6.27E+2	4.63E+3	4.59E+3
20		3.38E+1	3.03E+1	3.23E+2	3.08E+2	6.84E+2	7.66E+2	5.74E+3	5.67E+3
30		3.98E+1	3.57E+1	3.79E+2	3.62E+2	8.00E+2	8.96E+2	6.72E+3	6.64E+3
15-y-old									
	1	1.35E+1	1.81E+1	5.61E+1	9.08E+1	2.74E+0	5.34E+0	2.06E+1	3.02E+1
	2	1.49E+1	1.94E+1	6.00E+1	9.20E+1	3.49E+0	5.62E+0	2.17E+1	2.93E+1
	4	1.61E+1	2.05E+1	6.36E+1	9.49E+1	4.05E+0	6.08E+0	2.20E+1	2.98E+1
	8	1.74E+1	2.15E+1	6.83E+1	1.00E+2	4.47E+0	7.06E+0	2.27E+1	3.17E+1
	12	1.85E+1	2.22E+1	7.40E+1	1.06E+2	5.15E+0	8.24E+0	2.44E+1	3.39E+1
1	24	2.15E+1	2.39E+1	9.54E+1	1.23E+2	8.72E+0	1.32E+1	3.41E+1	4.47E+1
2		2.55E+1	2.59E+1	1.44E+2	1.60E+2	2.50E+1	3.45E+1	7.96E+1	9.78E+1
4		2.87E+1	2.77E+1	2.07E+2	2.01E+2	1.59E+2	1.98E+2	4.99E+2	5.83E+2
8		3.14E+1	3.00E+1	2.39E+2	2.25E+2	7.23E+2	7.80E+2	4.36E+3	4.42E+3
10		3.26E+1	3.11E+1	2.48E+2	2.34E+2	7.98E+2	8.53E+2	5.19E+3	5.16E+3
20		3.90E+1	3.72E+1	2.96E+2	2.79E+2	9.75E+2	1.04E+3	6.44E+3	6.37E+3
30		4.61E+1	4.39E+1	3.49E+2	3.28E+2	1.14E+3	1.22E+3	7.55E+3	7.46E+3
Adult male									
	1	9.36E+0	1.56E+1	5.10E+1	8.98E+1	3.08E+0	5.49E+0	2.44E+1	3.06E+1
	2	1.06E+1	1.70E+1	5.32E+1	9.20E+1	3.47E+0	6.13E+0	2.46E+1	3.22E+1
	4	1.15E+1	1.82E+1	5.50E+1	9.62E+1	3.57E+0	7.17E+0	2.42E+1	3.41E+1
	8	1.23E+1	1.92E+1	5.82E+1	1.02E+2	3.76E+0	8.82E+0	2.48E+1	3.59E+1
	12	1.30E+1	2.00E+1	6.29E+1	1.07E+2	4.35E+0	1.03E+1	2.69E+1	3.74E+1
1	24	1.50E+1	2.17E+1	8.14E+1	1.23E+2	7.89E+0	1.55E+1	3.90E+1	4.65E+1
2		1.76E+1	2.40E+1	1.24E+2	1.60E+2	2.57E+1	3.67E+1	9.44E+1	9.74E+1
4		1.97E+1	2.62E+1	1.78E+2	2.08E+2	1.84E+2	2.06E+2	6.02E+2	5.70E+2
8		2.15E+1	2.84E+1	2.05E+2	2.35E+2	8.84E+2	9.09E+2	5.18E+3	4.39E+3
10		2.23E+1	2.95E+1	2.12E+2	2.44E+2	9.79E+2	1.00E+3	6.14E+3	5.13E+3
20		2.65E+1	3.49E+1	2.53E+2	2.89E+2	1.20E+3	1.22E+3	7.62E+3	6.34E+3
30		3.12E+1	4.09E+1	2.98E+2	3.39E+2	1.40E+3	1.43E+3	8.92E+3	7.42E+3
Adult female									
	1	1.01E+1	1.15E+1	4.95E+1	7.66E+1	3.16E+0	5.10E+0	2.22E+1	3.27E+1
	2	1.12E+1	1.27E+1	5.18E+1	8.09E+1	3.96E+0	6.39E+0	2.23E+1	3.35E+1
	4	1.24E+1	1.38E+1	5.42E+1	8.53E+1	5.04E+0	7.99E+0	2.23E+1	3.60E+1
	8	1.36E+1	1.45E+1	5.87E+1	8.96E+1	6.61E+0	9.81E+0	2.34E+1	3.98E+1
	12	1.45E+1	1.50E+1	6.42E+1	9.30E+1	8.24E+0	1.14E+1	2.57E+1	4.25E+1
1	24	1.67E+1	1.59E+1	8.44E+1	1.05E+2	1.47E+1	1.71E+1	3.74E+1	5.42E+1
2		1.93E+1	1.71E+1	1.31E+2	1.35E+2	4.17E+1	4.03E+1	9.08E+1	1.14E+2
4		2.15E+1	1.82E+1	1.92E+2	1.72E+2	2.33E+2	2.14E+2	5.75E+2	6.64E+2
8		2.33E+1	1.97E+1	2.22E+2	1.93E+2	7.28E+2	7.82E+2	4.64E+3	4.68E+3
10		2.42E+1	2.04E+1	2.30E+2	2.01E+2	7.85E+2	8.52E+2	5.45E+3	5.41E+3
20		2.86E+1	2.42E+1	2.73E+2	2.38E+2	9.54E+2	1.04E+3	6.75E+3	6.67E+3
30		3.36E+1	2.84E+1	3.21E+2	2.79E+2	1.12E+3	1.21E+3	7.90E+3	7.81E+3

Table A-8. Inhaled Activity of ⁶⁰Co vs. Count Rate on Captus 3000 (Bq/cpm)

Time post intake		Pathway/distance of detector from chest/aspect							
		Inhalation: Type M				Inhalation: Type S			
d	h	Contact		1 ft		Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	1.34E+1	1.48E+1	2.77E+1	3.72E+1	1.35E+1	1.47E+1	2.76E+1	3.70E+1
	2	1.41E+1	1.61E+1	2.91E+1	3.78E+1	1.44E+1	1.63E+1	2.89E+1	3.76E+1
	4	1.46E+1	1.68E+1	3.09E+1	3.91E+1	1.53E+1	1.76E+1	3.07E+1	3.88E+1
	8	1.53E+1	1.74E+1	3.40E+1	4.23E+1	1.63E+1	1.84E+1	3.36E+1	4.17E+1
	12	1.63E+1	1.82E+1	3.76E+1	4.61E+1	1.73E+1	1.92E+1	3.70E+1	4.52E+1
1	24	1.98E+1	2.11E+1	5.07E+1	5.96E+1	2.05E+1	2.16E+1	4.98E+1	5.85E+1
2		2.60E+1	2.60E+1	8.37E+1	9.13E+1	2.64E+1	2.61E+1	8.52E+1	9.28E+1
4		3.22E+1	3.07E+1	1.36E+2	1.36E+2	3.23E+1	3.05E+1	1.48E+2	1.46E+2
8		3.58E+1	3.38E+1	1.64E+2	1.60E+2	3.48E+1	3.26E+1	1.74E+2	1.68E+2
10		3.70E+1	3.50E+1	1.70E+2	1.67E+2	3.55E+1	3.32E+1	1.78E+2	1.72E+2
20		4.29E+1	4.05E+1	2.00E+2	1.95E+2	3.88E+1	3.63E+1	1.95E+2	1.88E+2
30		4.86E+1	4.59E+1	2.26E+2	2.20E+2	4.19E+1	3.92E+1	2.11E+2	2.04E+2
1-y-old									
	1	1.60E+1	2.28E+1	3.70E+1	4.78E+1	1.60E+1	2.27E+1	3.67E+1	4.77E+1
	2	1.64E+1	2.35E+1	4.14E+1	5.06E+1	1.65E+1	2.35E+1	4.13E+1	5.07E+1
	4	1.70E+1	2.41E+1	4.52E+1	5.35E+1	1.72E+1	2.44E+1	4.53E+1	5.38E+1
	8	1.82E+1	2.50E+1	4.96E+1	5.79E+1	1.84E+1	2.53E+1	4.97E+1	5.83E+1
	12	1.95E+1	2.60E+1	5.47E+1	6.32E+1	1.97E+1	2.62E+1	5.47E+1	6.34E+1
1	24	2.42E+1	2.95E+1	7.33E+1	8.11E+1	2.39E+1	2.90E+1	7.29E+1	8.09E+1
2		3.30E+1	3.56E+1	1.13E+2	1.16E+2	3.18E+1	3.42E+1	1.13E+2	1.15E+2
4		4.22E+1	4.16E+1	1.60E+2	1.53E+2	3.99E+1	3.93E+1	1.60E+2	1.51E+2
8		4.68E+1	4.54E+1	1.83E+2	1.71E+2	4.31E+1	4.18E+1	1.77E+2	1.65E+2
10		4.83E+1	4.68E+1	1.89E+2	1.77E+2	4.39E+1	4.26E+1	1.81E+2	1.68E+2
20		5.54E+1	5.37E+1	2.17E+2	2.03E+2	4.78E+1	4.63E+1	1.96E+2	1.83E+2
30		6.24E+1	6.05E+1	2.44E+2	2.29E+2	5.13E+1	4.99E+1	2.11E+2	1.96E+2
5-y-old									
	1	2.10E+1	3.16E+1	6.11E+1	6.50E+1	2.09E+1	3.12E+1	6.06E+1	6.42E+1
	2	2.17E+1	3.22E+1	7.02E+1	7.10E+1	2.18E+1	3.19E+1	7.03E+1	7.06E+1
	4	2.26E+1	3.28E+1	7.72E+1	7.55E+1	2.28E+1	3.27E+1	7.81E+1	7.58E+1
	8	2.42E+1	3.39E+1	8.24E+1	7.99E+1	2.44E+1	3.39E+1	8.35E+1	8.03E+1
	12	2.62E+1	3.53E+1	8.81E+1	8.50E+1	2.62E+1	3.51E+1	8.90E+1	8.50E+1
1	24	3.28E+1	3.99E+1	1.07E+2	1.01E+2	3.22E+1	3.88E+1	1.07E+2	9.99E+1
2		4.52E+1	4.76E+1	1.40E+2	1.28E+2	4.34E+1	4.53E+1	1.37E+2	1.24E+2
4		5.81E+1	5.48E+1	1.69E+2	1.53E+2	5.48E+1	5.13E+1	1.63E+2	1.45E+2
8		6.45E+1	5.96E+1	1.86E+2	1.67E+2	5.93E+1	5.44E+1	1.74E+2	1.55E+2
10		6.66E+1	6.15E+1	1.92E+2	1.72E+2	6.04E+1	5.55E+1	1.78E+2	1.58E+2
20		7.64E+1	7.06E+1	2.20E+2	1.97E+2	6.58E+1	6.05E+1	1.93E+2	1.71E+2
30		8.62E+1	7.97E+1	2.47E+2	2.22E+2	7.08E+1	6.52E+1	2.08E+2	1.84E+2

Table A-8 (continued)

Time post intake		Pathway/distance of detector from chest/aspect							
		Inhalation: Type M				Inhalation: Type S			
d	h	Contact		1 ft		Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
10-y-old									
	1	2.57E+1	4.36E+1	7.56E+1	8.20E+1	2.59E+1	4.33E+1	7.55E+1	8.11E+1
	2	2.70E+1	4.45E+1	8.43E+1	8.97E+1	2.73E+1	4.44E+1	8.50E+1	8.95E+1
	4	2.82E+1	4.55E+1	9.08E+1	9.55E+1	2.87E+1	4.58E+1	9.28E+1	9.62E+1
	8	3.05E+1	4.75E+1	9.62E+1	1.00E+2	3.11E+1	4.78E+1	9.87E+1	1.02E+2
	12	3.34E+1	4.97E+1	1.02E+2	1.05E+2	3.37E+1	4.97E+1	1.04E+2	1.06E+2
1	24	4.32E+1	5.69E+1	1.21E+2	1.22E+2	4.29E+1	5.58E+1	1.21E+2	1.21E+2
2		6.32E+1	6.96E+1	1.53E+2	1.49E+2	6.12E+1	6.68E+1	1.48E+2	1.44E+2
4		8.56E+1	8.20E+1	1.82E+2	1.74E+2	8.11E+1	7.75E+1	1.74E+2	1.66E+2
8		9.64E+1	8.98E+1	1.99E+2	1.90E+2	8.89E+1	8.27E+1	1.85E+2	1.76E+2
10		9.96E+1	9.27E+1	2.06E+2	1.96E+2	9.07E+1	8.44E+1	1.88E+2	1.79E+2
20		1.15E+2	1.07E+2	2.36E+2	2.25E+2	9.93E+1	9.24E+1	2.05E+2	1.95E+2
30		1.30E+2	1.21E+2	2.65E+2	2.53E+2	1.07E+2	1.00E+2	2.20E+2	2.10E+2
15-y-old									
	1	3.67E+1	5.84E+1	9.07E+1	1.00E+2	3.68E+1	5.80E+1	8.96E+1	9.79E+1
	2	3.87E+1	6.00E+1	9.75E+1	1.06E+2	3.90E+1	5.99E+1	9.69E+1	1.05E+2
	4	4.07E+1	6.19E+1	1.03E+2	1.11E+2	4.13E+1	6.22E+1	1.03E+2	1.10E+2
	8	4.39E+1	6.49E+1	1.09E+2	1.16E+2	4.45E+1	6.54E+1	1.09E+2	1.15E+2
	12	4.77E+1	6.81E+1	1.15E+2	1.20E+2	4.80E+1	6.81E+1	1.14E+2	1.19E+2
1	24	6.02E+1	7.75E+1	1.32E+2	1.34E+2	5.94E+1	7.58E+1	1.29E+2	1.30E+2
2		8.37E+1	9.23E+1	1.59E+2	1.55E+2	8.07E+1	8.82E+1	1.51E+2	1.48E+2
4		1.08E+2	1.06E+2	1.83E+2	1.74E+2	1.02E+2	9.95E+1	1.71E+2	1.63E+2
8		1.20E+2	1.15E+2	1.99E+2	1.88E+2	1.11E+2	1.06E+2	1.82E+2	1.71E+2
10		1.25E+2	1.19E+2	2.05E+2	1.93E+2	1.13E+2	1.08E+2	1.85E+2	1.74E+2
20		1.45E+2	1.38E+2	2.36E+2	2.22E+2	1.25E+2	1.19E+2	2.02E+2	1.90E+2
30		1.65E+2	1.57E+2	2.66E+2	2.50E+2	1.36E+2	1.29E+2	2.18E+2	2.05E+2
Adult male									
	1	3.31E+1	5.42E+1	7.25E+1	8.82E+1	3.25E+1	5.34E+1	7.06E+1	7.64E+1
	2	3.46E+1	5.66E+1	8.12E+1	9.60E+1	3.40E+1	5.60E+1	7.94E+1	8.59E+1
	4	3.58E+1	5.90E+1	8.86E+1	1.03E+2	3.53E+1	5.87E+1	8.71E+1	9.47E+1
	8	3.80E+1	6.17E+1	9.47E+1	1.10E+2	3.73E+1	6.14E+1	9.29E+1	1.01E+2
	12	4.08E+1	6.40E+1	1.00E+2	1.15E+2	3.97E+1	6.34E+1	9.79E+1	1.05E+2
1	24	5.01E+1	7.09E+1	1.17E+2	1.31E+2	4.80E+1	6.87E+1	1.13E+2	1.14E+2
2		6.64E+1	8.24E+1	1.44E+2	1.55E+2	6.24E+1	7.80E+1	1.36E+2	1.29E+2
4		8.17E+1	9.34E+1	1.69E+2	1.79E+2	7.54E+1	8.70E+1	1.57E+2	1.41E+2
8		8.97E+1	1.01E+2	1.84E+2	1.94E+2	8.08E+1	9.19E+1	1.67E+2	1.48E+2
10		9.24E+1	1.04E+2	1.89E+2	1.99E+2	8.24E+1	9.35E+1	1.70E+2	1.51E+2
20		1.06E+2	1.19E+2	2.16E+2	2.28E+2	8.97E+1	1.02E+2	1.85E+2	1.64E+2
30		1.19E+2	1.34E+2	2.44E+2	2.56E+2	9.66E+1	1.09E+2	1.99E+2	1.76E+2
Adult female									
	1	3.08E+1	4.43E+1	7.67E+1	7.83E+1	3.03E+1	4.34E+1	7.50E+1	8.61E+1
	2	3.19E+1	4.63E+1	8.58E+1	8.75E+1	3.14E+1	4.55E+1	8.44E+1	9.41E+1
	4	3.31E+1	4.81E+1	9.36E+1	9.57E+1	3.26E+1	4.76E+1	9.28E+1	1.02E+2
	8	3.56E+1	5.00E+1	1.00E+2	1.02E+2	3.49E+1	4.95E+1	9.93E+1	1.08E+2
	12	3.84E+1	5.17E+1	1.06E+2	1.06E+2	3.75E+1	5.09E+1	1.05E+2	1.13E+2
1	24	4.71E+1	5.67E+1	1.22E+2	1.18E+2	4.54E+1	5.46E+1	1.19E+2	1.26E+2
2		6.17E+1	6.49E+1	1.47E+2	1.35E+2	5.83E+1	6.12E+1	1.40E+2	1.47E+2
4		7.48E+1	7.28E+1	1.68E+2	1.51E+2	6.94E+1	6.75E+1	1.57E+2	1.67E+2
8		8.18E+1	7.86E+1	1.82E+2	1.63E+2	7.41E+1	7.12E+1	1.66E+2	1.77E+2
10		8.42E+1	8.10E+1	1.87E+2	1.68E+2	7.54E+1	7.25E+1	1.69E+2	1.80E+2
20		9.63E+1	9.27E+1	2.14E+2	1.92E+2	8.19E+1	7.89E+1	1.84E+2	1.95E+2
30		1.08E+2	1.04E+2	2.40E+2	2.15E+2	8.81E+1	8.49E+1	1.97E+2	2.09E+2

Table A-9. Ingested Activity of ⁶⁰Co vs. Count Rate on Captus 3000 (Bq/cpm)

Time post intake		Distance of detector from abdomen/aspect			
		Contact		1 ft	
d	h	Anterior	Posterior	Anterior	Posterior
Infant					
	1	2.97E+0	3.95E+0	1.49E+1	1.74E+1
	2	3.43E+0	4.19E+0	1.59E+1	1.75E+1
	4	4.10E+0	4.72E+0	1.71E+1	1.83E+1
	8	4.94E+0	5.58E+0	1.87E+1	2.00E+1
	12	5.71E+0	6.39E+0	2.05E+1	2.18E+1
1	24	8.37E+0	9.17E+0	2.70E+1	2.83E+1
2		1.50E+1	1.58E+1	4.49E+1	4.60E+1
4		2.60E+1	2.66E+1	8.09E+1	8.10E+1
8		3.58E+1	3.64E+1	1.15E+2	1.14E+2
10		3.96E+1	4.02E+1	1.27E+2	1.27E+2
20		5.57E+1	5.65E+1	1.79E+2	1.78E+2
30		6.61E+1	6.71E+1	2.13E+2	2.11E+2
1-y-old					
	1	4.09E+0	5.82E+0	1.50E+1	1.89E+1
	2	5.03E+0	6.20E+0	1.57E+1	1.88E+1
	4	5.84E+0	6.74E+0	1.65E+1	1.93E+1
	8	6.75E+0	7.85E+0	1.79E+1	2.08E+1
	12	7.95E+0	9.21E+0	1.97E+1	2.25E+1
1	24	1.31E+1	1.47E+1	2.75E+1	3.02E+1
2		2.95E+1	3.18E+1	5.58E+1	5.92E+1
4		6.90E+1	7.45E+1	1.59E+2	1.65E+2
8		1.04E+2	1.14E+2	2.84E+2	2.94E+2
10		1.15E+2	1.26E+2	3.16E+2	3.27E+2
20		1.62E+2	1.77E+2	4.46E+2	4.61E+2
30		1.93E+2	2.11E+2	5.31E+2	5.49E+2
5-y-old					
	1	5.96E+0	8.52E+0	1.55E+1	1.95E+1
	2	7.96E+0	9.96E+0	1.66E+1	1.99E+1
	4	9.43E+0	1.09E+1	1.78E+1	2.12E+1
	8	1.04E+1	1.20E+1	1.97E+1	2.38E+1
	12	1.20E+1	1.38E+1	2.21E+1	2.65E+1
1	24	1.90E+1	2.16E+1	3.20E+1	3.76E+1
2		4.11E+1	4.56E+1	6.72E+1	7.59E+1
4		9.32E+1	1.02E+2	1.93E+2	2.04E+2
8		1.40E+2	1.53E+2	3.44E+2	3.47E+2
10		1.55E+2	1.69E+2	3.83E+2	3.86E+2
20		2.19E+2	2.38E+2	5.41E+2	5.44E+2
30		2.60E+2	2.83E+2	6.44E+2	6.48E+2

Table A-9 (continued)

Time post intake		Distance of detector from abdomen/aspect			
		Contact		1 ft	
d	h	Anterior	Posterior	Anterior	Posterior
10-y-old					
	1	8.79E+0	1.20E+1	1.67E+1	2.15E+1
	2	1.21E+1	1.45E+1	1.82E+1	2.17E+1
	4	1.49E+1	1.60E+1	1.99E+1	2.30E+1
	8	1.63E+1	1.72E+1	2.28E+1	2.63E+1
	12	1.82E+1	1.95E+1	2.62E+1	3.02E+1
1	24	2.66E+1	2.93E+1	4.01E+1	4.55E+1
2		5.32E+1	5.89E+1	8.76E+1	9.68E+1
4		1.22E+2	1.27E+2	2.43E+2	2.57E+2
8		1.89E+2	1.89E+2	4.13E+2	4.27E+2
10		2.10E+2	2.10E+2	4.59E+2	4.75E+2
20		2.95E+2	2.95E+2	6.48E+2	6.70E+2
30		3.51E+2	3.50E+2	7.71E+2	7.97E+2
15-y-old					
	1	1.34E+1	1.66E+1	1.98E+1	2.58E+1
	2	1.74E+1	2.05E+1	2.23E+1	2.71E+1
	4	2.05E+1	2.32E+1	2.48E+1	2.92E+1
	8	2.24E+1	2.52E+1	2.84E+1	3.37E+1
	12	2.49E+1	2.80E+1	3.31E+1	3.91E+1
1	24	3.57E+1	4.00E+1	5.23E+1	6.05E+1
2		6.96E+1	7.69E+1	1.16E+2	1.29E+2
4		1.57E+2	1.66E+2	2.94E+2	3.13E+2
8		2.41E+2	2.49E+2	4.70E+2	4.90E+2
10		2.67E+2	2.76E+2	5.21E+2	5.43E+2
20		3.76E+2	3.88E+2	7.35E+2	7.65E+2
30		4.47E+2	4.61E+2	8.74E+2	9.09E+2
Adult male					
	1	1.13E+1	1.44E+1	2.04E+1	2.77E+1
	2	1.43E+1	1.70E+1	2.17E+1	3.25E+1
	4	1.72E+1	2.01E+1	2.24E+1	3.81E+1
	8	2.01E+1	2.41E+1	2.45E+1	4.54E+1
	12	2.31E+1	2.79E+1	2.84E+1	5.30E+1
1	24	3.58E+1	4.23E+1	4.76E+1	8.24E+1
2		8.56E+1	9.71E+1	1.30E+2	1.92E+2
4		3.52E+2	3.62E+2	6.17E+2	6.94E+2
8		8.48E+2	7.88E+2	1.66E+3	1.44E+3
10		9.53E+2	8.82E+2	1.88E+3	1.61E+3
20		1.35E+3	1.24E+3	2.66E+3	2.27E+3
30		1.60E+3	1.48E+3	3.17E+3	2.69E+3
Adult female					
	1	1.20E+1	1.42E+1	2.19E+1	2.65E+1
	2	1.55E+1	1.90E+1	2.55E+1	2.84E+1
	4	1.92E+1	2.58E+1	3.04E+1	3.16E+1
	8	2.25E+1	3.26E+1	3.79E+1	3.71E+1
	12	2.57E+1	3.67E+1	4.55E+1	4.29E+1
1	24	3.87E+1	4.83E+1	7.46E+1	6.58E+1
2		8.77E+1	9.51E+1	1.84E+2	1.55E+2
4		3.11E+2	3.20E+2	6.80E+2	6.54E+2
8		6.46E+2	6.71E+2	1.41E+3	1.65E+3
10		7.22E+2	7.50E+2	1.58E+3	1.86E+3
20		1.02E+3	1.06E+3	2.22E+3	2.62E+3
30		1.21E+3	1.25E+3	2.64E+3	3.12E+3

Table A-10. Inhaled Activity of Type $F^{131}\text{I}$ vs. Count Rate on Captus 3000 (Bq/cpm)

Time post intake		Distance of detector from body/aspect					
d	h	Contact		1 ft		Thyroid: anterior	
		Anterior	Posterior	Anterior	Posterior	Contact	1 ft
Infant							
	1	2.54E+1	2.59E+1	4.29E+1	6.56E+1	1.30E+1	4.12E+1
	2	2.54E+1	2.64E+1	4.60E+1	6.93E+1	1.32E+1	4.32E+1
	4	2.74E+1	2.88E+1	5.18E+1	7.87E+1	1.38E+1	4.74E+1
	8	3.24E+1	3.44E+1	6.37E+1	9.92E+1	1.55E+1	5.62E+1
	12	3.71E+1	3.97E+1	7.62E+1	1.20E+2	1.73E+1	6.54E+1
1	24	4.72E+1	5.16E+1	1.14E+2	1.77E+2	2.37E+1	9.38E+1
2		5.80E+1	6.49E+1	1.80E+2	2.50E+2	3.84E+1	1.48E+2
4		7.61E+1	8.63E+1	2.82E+2	3.49E+2	6.45E+1	2.36E+2
8		1.29E+2	1.46E+2	4.91E+2	5.94E+2	1.15E+2	4.14E+2
10		1.67E+2	1.90E+2	6.38E+2	7.72E+2	1.50E+2	5.38E+2
20		6.21E+2	7.06E+2	2.37E+3	2.87E+3	5.55E+2	2.00E+3
30		2.30E+3	2.61E+3	8.76E+3	1.06E+4	2.05E+3	7.38E+3
1-y-old							
	1	3.90E+1	4.66E+1	5.92E+1	8.56E+1	6.61E+1	4.63E+1
	2	3.90E+1	4.70E+1	6.40E+1	9.01E+1	5.89E+1	4.70E+1
	4	4.38E+1	5.27E+1	7.22E+1	1.01E+2	5.25E+1	5.00E+1
	8	5.77E+1	6.80E+1	8.76E+1	1.26E+2	4.72E+1	5.74E+1
	12	7.29E+1	8.42E+1	1.03E+2	1.51E+2	4.50E+1	6.53E+1
1	24	1.13E+2	1.25E+2	1.45E+2	2.12E+2	4.48E+1	9.01E+1
2		1.53E+2	1.64E+2	2.07E+2	2.82E+2	5.09E+1	1.40E+2
4		2.00E+2	2.12E+2	2.94E+2	3.77E+2	6.60E+1	2.20E+2
8		3.22E+2	3.42E+2	4.83E+2	6.10E+2	1.07E+2	3.69E+2
10		4.09E+2	4.34E+2	6.15E+2	7.76E+2	1.36E+2	4.70E+2
20		1.36E+3	1.44E+3	2.04E+3	2.58E+3	4.54E+2	1.56E+3
30		4.52E+3	4.80E+3	6.79E+3	8.57E+3	1.51E+3	5.19E+3
5-y-old							
	1	5.90E+1	7.60E+1	1.04E+2	1.24E+2	1.13E+2	6.20E+1
	2	6.01E+1	7.77E+1	1.12E+2	1.29E+2	9.75E+1	6.24E+1
	4	7.01E+1	9.05E+1	1.26E+2	1.43E+2	8.06E+1	6.51E+1
	8	1.01E+2	1.28E+2	1.52E+2	1.73E+2	6.65E+1	7.22E+1
	12	1.41E+2	1.75E+2	1.77E+2	2.02E+2	6.08E+1	8.01E+1
1	24	2.92E+2	3.37E+2	2.35E+2	2.69E+2	5.78E+1	1.06E+2
2		4.95E+2	5.23E+2	2.98E+2	3.41E+2	6.42E+1	1.60E+2
4		6.52E+2	6.71E+2	3.85E+2	4.38E+2	8.15E+1	2.44E+2
8		9.93E+2	1.02E+3	5.95E+2	6.76E+2	1.27E+2	3.92E+2
10		1.23E+3	1.26E+3	7.38E+2	8.38E+2	1.57E+2	4.87E+2
20		3.61E+3	3.70E+3	2.18E+3	2.47E+3	4.66E+2	1.44E+3
30		1.07E+4	1.09E+4	6.43E+3	7.30E+3	1.38E+3	4.25E+3

Table A-10 (continued)

Time post intake		Distance of detector from body/aspect					
		Contact		1 ft		Thyroid: anterior	
d	h	Anterior	Posterior	Anterior	Posterior	Contact	1 ft
10-y-old							
	1	7.79E+1	1.05E+2	1.35E+2	1.57E+2	1.42E+2	6.83E+1
	2	7.93E+1	1.07E+2	1.42E+2	1.62E+2	1.16E+2	6.84E+1
	4	9.28E+1	1.25E+2	1.58E+2	1.80E+2	8.89E+1	7.02E+1
	8	1.35E+2	1.78E+2	1.91E+2	2.21E+2	6.81E+1	7.56E+1
	12	1.91E+2	2.48E+2	2.22E+2	2.60E+2	6.02E+1	8.20E+1
1	24	4.20E+2	5.03E+2	2.89E+2	3.52E+2	5.50E+1	1.05E+2
2		7.66E+2	8.17E+2	3.54E+2	4.43E+2	5.96E+1	1.53E+2
4		1.02E+3	1.04E+3	4.39E+2	5.57E+2	7.34E+1	2.26E+2
8		1.48E+3	1.51E+3	6.44E+2	8.15E+2	1.08E+2	3.43E+2
10		1.78E+3	1.81E+3	7.78E+2	9.85E+2	1.31E+2	4.15E+2
20		4.52E+3	4.59E+3	2.01E+3	2.54E+3	3.41E+2	1.08E+3
30		1.16E+4	1.18E+4	5.19E+3	6.55E+3	8.83E+2	2.79E+3
15-y-old							
	1	1.12E+2	1.62E+2	1.83E+2	2.20E+2	1.92E+2	9.34E+1
	2	1.16E+2	1.67E+2	1.91E+2	2.28E+2	1.49E+2	9.28E+1
	4	1.37E+2	1.97E+2	2.16E+2	2.59E+2	1.08E+2	9.31E+1
	8	2.01E+2	2.85E+2	2.75E+2	3.35E+2	7.86E+1	9.65E+1
	12	2.88E+2	4.02E+2	3.36E+2	4.15E+2	6.80E+1	1.02E+2
1	24	6.63E+2	8.52E+2	4.83E+2	6.17E+2	6.07E+1	1.23E+2
2		1.27E+3	1.44E+3	6.20E+2	8.08E+2	6.50E+1	1.72E+2
4		1.71E+3	1.83E+3	7.72E+2	1.01E+3	7.96E+1	2.44E+2
8		2.47E+3	2.62E+3	1.12E+3	1.47E+3	1.17E+2	3.66E+2
10		2.96E+3	3.13E+3	1.35E+3	1.76E+3	1.41E+2	4.43E+2
20		7.40E+3	7.81E+3	3.44E+3	4.47E+3	3.63E+2	1.14E+3
30		1.87E+4	1.98E+4	8.78E+3	1.14E+4	9.30E+2	2.91E+3
Adult male							
	1	1.23E+2	1.56E+2	1.76E+2	2.14E+2	1.66E+2	—
	2	1.30E+2	1.66E+2	1.90E+2	2.32E+2	1.24E+2	—
	4	1.53E+2	1.97E+2	2.08E+2	2.66E+2	8.73E+1	—
	8	2.15E+2	2.77E+2	2.34E+2	3.33E+2	6.23E+1	—
	12	2.91E+2	3.75E+2	2.54E+2	3.98E+2	5.33E+1	—
1	24	5.41E+2	6.91E+2	2.94E+2	5.43E+2	4.67E+1	—
2		8.25E+2	1.01E+3	3.38E+2	6.69E+2	4.91E+1	—
4		1.05E+3	1.25E+3	4.12E+2	8.20E+2	5.93E+1	—
8		1.52E+3	1.80E+3	5.99E+2	1.19E+3	8.65E+1	—
10		1.83E+3	2.16E+3	7.21E+2	1.42E+3	1.04E+2	—
20		4.56E+3	5.35E+3	1.82E+3	3.58E+3	2.66E+2	—
30		1.14E+4	1.34E+4	4.61E+3	8.99E+3	6.75E+2	—
Adult female							
	1	1.18E+2	1.28E+2	1.73E+2	1.80E+2	1.47E+2	—
	2	1.23E+2	1.34E+2	1.82E+2	1.93E+2	1.15E+2	—
	4	1.43E+2	1.57E+2	1.95E+2	2.20E+2	8.55E+1	—
	8	1.99E+2	2.21E+2	2.15E+2	2.74E+2	6.36E+1	—
	12	2.65E+2	3.01E+2	2.31E+2	3.26E+2	5.54E+1	—
1	24	4.78E+2	5.63E+2	2.64E+2	4.46E+2	4.93E+1	—
2		7.16E+2	8.41E+2	3.04E+2	5.58E+2	5.21E+1	—
4		9.17E+2	1.05E+3	3.71E+2	6.92E+2	6.30E+1	—
8		1.33E+3	1.52E+3	5.40E+2	1.00E+3	9.18E+1	—
10		1.59E+3	1.82E+3	6.50E+2	1.21E+3	1.11E+2	—
20		3.98E+3	4.53E+3	1.64E+3	3.03E+3	2.82E+2	—
30		9.98E+3	1.13E+4	4.16E+3	7.63E+3	7.16E+2	—

Table A-11. Ingested Activity of ¹³¹I vs. Count Rate on Captus 3000 (Bq/cpm)

Time post intake		Distance of detector from body/aspect					
		Contact		1 ft		Thyroid: anterior	
d	h	Anterior	Posterior	Anterior	Posterior	Contact	1 ft
Infant							
	1	5.63E+0	8.12E+0	2.46E+1	3.03E+1	2.76E+1	3.21E+1
	2	7.62E+0	9.54E+0	2.79E+1	3.18E+1	2.10E+1	3.35E+1
	4	1.10E+1	1.24E+1	3.37E+1	3.68E+1	1.83E+1	3.69E+1
	8	1.77E+1	1.95E+1	4.55E+1	4.97E+1	1.76E+1	4.35E+1
	12	2.76E+1	3.01E+1	5.85E+1	6.44E+1	1.75E+1	4.94E+1
1	24	8.73E+1	9.34E+1	9.29E+1	1.04E+2	1.81E+1	6.16E+1
2		2.41E+2	2.44E+2	1.24E+2	1.41E+2	2.04E+1	7.40E+1
4		3.05E+2	3.05E+2	1.60E+2	1.81E+2	2.66E+1	9.59E+1
8		4.83E+2	4.83E+2	2.68E+2	3.02E+2	4.50E+1	1.62E+2
10		6.25E+2	6.25E+2	3.48E+2	3.93E+2	5.85E+1	2.10E+2
20		2.32E+3	2.32E+3	1.29E+3	1.46E+3	2.17E+2	7.81E+2
30		8.58E+3	8.58E+3	4.77E+3	5.39E+3	8.02E+2	2.88E+3
1-y-old							
	1	7.54E+0	1.25E+1	2.65E+1	3.56E+1	4.47E+1	5.70E+1
	2	1.14E+1	1.56E+1	3.16E+1	3.87E+1	3.26E+1	4.90E+1
	4	1.82E+1	2.11E+1	4.03E+1	4.66E+1	2.58E+1	4.76E+1
	8	3.02E+1	3.36E+1	5.94E+1	6.75E+1	2.16E+1	5.13E+1
	12	4.72E+1	5.20E+1	8.37E+1	9.44E+1	1.99E+1	5.49E+1
1	24	1.53E+2	1.63E+2	1.74E+2	1.91E+2	1.89E+1	6.23E+1
2		4.53E+2	4.44E+2	2.78E+2	2.98E+2	2.07E+1	7.19E+1
4		5.66E+2	5.49E+2	3.53E+2	3.75E+2	2.64E+1	9.14E+1
8		8.40E+2	8.16E+2	5.54E+2	5.89E+2	4.28E+1	1.48E+2
10		1.06E+3	1.03E+3	7.02E+2	7.46E+2	5.44E+1	1.88E+2
20		3.49E+3	3.39E+3	2.33E+3	2.47E+3	1.81E+2	6.24E+2
30		1.16E+4	1.13E+4	7.74E+3	8.22E+3	6.02E+2	2.07E+3
5-y-old							
	1	1.02E+1	1.79E+1	2.84E+1	4.03E+1	8.14E+1	9.45E+1
	2	1.67E+1	2.41E+1	3.55E+1	4.49E+1	5.48E+1	7.38E+1
	4	2.86E+1	3.42E+1	4.65E+1	5.47E+1	3.82E+1	6.54E+1
	8	4.82E+1	5.46E+1	7.06E+1	8.20E+1	2.80E+1	6.33E+1
	12	7.54E+1	8.49E+1	1.07E+2	1.23E+2	2.43E+1	6.30E+1
1	24	2.52E+2	2.75E+2	3.06E+2	3.41E+2	2.17E+1	6.49E+1
2		8.23E+2	8.18E+2	7.33E+2	7.61E+2	2.32E+1	7.21E+1
4		1.02E+3	1.00E+3	9.28E+2	9.51E+2	2.88E+1	8.96E+1
8		1.39E+3	1.37E+3	1.33E+3	1.36E+3	4.47E+1	1.38E+2
10		1.69E+3	1.66E+3	1.62E+3	1.66E+3	5.55E+1	1.72E+2
20		4.84E+3	4.76E+3	4.70E+3	4.82E+3	1.64E+2	5.08E+2
30		1.43E+4	1.40E+4	1.39E+4	1.42E+4	4.85E+2	1.50E+3

Table A-11 (continued)

Time post intake		Distance of detector from body/aspect					
		Contact		1 ft		Thyroid: anterior	
d	h	Anterior	Posterior	Anterior	Posterior	Contact	1 ft
10-y-old							
	1	1.56E+1	2.46E+1	3.12E+1	4.61E+1	1.17E+2	1.41E+2
	2	2.49E+1	3.40E+1	4.14E+1	5.29E+1	7.13E+1	1.04E+2
	4	4.22E+1	4.97E+1	5.77E+1	6.66E+1	4.38E+1	8.42E+1
	8	7.09E+1	8.04E+1	9.11E+1	1.03E+2	2.90E+1	7.22E+1
	12	1.11E+2	1.26E+2	1.41E+2	1.58E+2	2.41E+1	6.72E+1
1	24	3.84E+2	4.26E+2	4.52E+2	4.96E+2	2.06E+1	6.38E+1
2		1.45E+3	1.51E+3	1.42E+3	1.46E+3	2.16E+1	6.85E+1
4		1.91E+3	1.96E+3	1.89E+3	1.91E+3	2.61E+1	8.29E+1
8		2.41E+3	2.46E+3	2.48E+3	2.52E+3	3.84E+1	1.22E+2
10		2.77E+3	2.83E+3	2.89E+3	2.93E+3	4.65E+1	1.47E+2
20		6.36E+3	6.48E+3	6.81E+3	6.92E+3	1.21E+2	3.82E+2
30		1.59E+4	1.62E+4	1.71E+4	1.74E+4	3.13E+2	9.89E+2
15-y-old							
	1	2.62E+1	3.72E+1	3.60E+1	5.75E+1	1.58E+2	2.11E+2
	2	4.06E+1	5.14E+1	5.04E+1	6.81E+1	8.76E+1	1.45E+2
	4	6.60E+1	7.50E+1	7.42E+1	8.81E+1	4.89E+1	1.06E+2
	8	1.10E+2	1.22E+2	1.20E+2	1.38E+2	3.04E+1	8.10E+1
	12	1.73E+2	1.92E+2	1.88E+2	2.16E+2	2.48E+1	7.15E+1
1	24	6.03E+2	6.69E+2	6.41E+2	7.24E+2	2.08E+1	6.43E+1
2		2.38E+3	2.64E+3	2.42E+3	2.55E+3	2.16E+1	6.79E+1
4		3.15E+3	3.46E+3	3.31E+3	3.40E+3	2.61E+1	8.20E+1
8		3.92E+3	4.22E+3	4.23E+3	4.33E+3	3.82E+1	1.20E+2
10		4.47E+3	4.80E+3	4.86E+3	4.98E+3	4.61E+1	1.45E+2
20		9.91E+3	1.05E+4	1.10E+4	1.12E+4	1.19E+2	3.72E+2
30		2.41E+4	2.55E+4	2.69E+4	2.74E+4	3.04E+2	9.52E+2
Adult male							
	1	2.40E+1	3.42E+1	4.31E+1	5.80E+1	8.76E+1	—
	2	3.68E+1	4.59E+1	5.89E+1	6.93E+1	5.52E+1	—
	4	5.94E+1	6.55E+1	8.40E+1	8.97E+1	3.42E+1	—
	8	9.71E+1	1.04E+2	1.29E+2	1.36E+2	2.26E+1	—
	12	1.48E+2	1.60E+2	1.89E+2	2.01E+2	1.88E+1	—
1	24	4.26E+2	4.76E+2	4.50E+2	5.04E+2	1.60E+1	—
2		1.04E+3	1.23E+3	8.27E+2	9.85E+2	1.67E+1	—
4		1.33E+3	1.59E+3	1.04E+3	1.24E+3	2.01E+1	—
8		1.83E+3	2.16E+3	1.46E+3	1.72E+3	2.93E+1	—
10		2.15E+3	2.53E+3	1.73E+3	2.04E+3	3.54E+1	—
20		5.02E+3	5.80E+3	4.15E+3	4.84E+3	9.02E+1	—
30		1.21E+4	1.39E+4	1.02E+4	1.18E+4	2.29E+2	—
Adult female							
	1	2.43E+1	2.85E+1	4.14E+1	5.04E+1	7.80E+1	—
	2	3.53E+1	3.99E+1	5.56E+1	6.28E+1	5.09E+1	—
	4	5.39E+1	5.90E+1	7.87E+1	8.38E+1	3.34E+1	—
	8	8.73E+1	9.53E+1	1.23E+2	1.29E+2	2.31E+1	—
	12	1.34E+2	1.47E+2	1.83E+2	1.93E+2	1.96E+1	—
1	24	4.07E+2	4.60E+2	4.75E+2	5.10E+2	1.70E+1	—
2		1.08E+3	1.31E+3	9.74E+2	1.07E+3	1.77E+1	—
4		1.40E+3	1.70E+3	1.23E+3	1.34E+3	2.14E+1	—
8		1.90E+3	2.27E+3	1.71E+3	1.86E+3	3.12E+1	—
10		2.22E+3	2.64E+3	2.02E+3	2.20E+3	3.76E+1	—
20		5.12E+3	5.96E+3	4.79E+3	5.18E+3	9.57E+1	—
30		1.23E+4	1.42E+4	1.17E+4	1.26E+4	2.43E+2	—

Table A-12. Intake of ¹³⁷Cs vs. Count Rate on Captus 3000 (Bq/cpm)

Time post intake		Pathway/distance of detector from body/aspect							
		Inhalation: Type F				Ingestion			
d	h	Contact		1 ft		Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	3.01E+1	3.24E+1	5.57E+1	8.13E+1	7.26E+0	9.97E+0	3.19E+1	3.84E+1
	2	3.01E+1	3.27E+1	5.86E+1	8.29E+1	9.33E+0	1.12E+1	3.50E+1	3.89E+1
	4	3.22E+1	3.50E+1	6.30E+1	8.68E+1	1.17E+1	1.27E+1	3.80E+1	4.03E+1
	8	3.75E+1	4.00E+1	7.07E+1	9.38E+1	1.38E+1	1.44E+1	4.09E+1	4.27E+1
	12	4.23E+1	4.45E+1	7.79E+1	9.99E+1	1.53E+1	1.57E+1	4.28E+1	4.44E+1
1	24	5.18E+1	5.33E+1	9.65E+1	1.13E+2	1.81E+1	1.80E+1	4.61E+1	4.74E+1
2		5.95E+1	6.08E+1	1.22E+2	1.29E+2	1.98E+1	1.95E+1	4.90E+1	5.02E+1
4		6.66E+1	6.82E+1	1.49E+2	1.47E+2	2.17E+1	2.13E+1	5.34E+1	5.47E+1
8		7.96E+1	8.15E+1	1.81E+2	1.76E+2	2.58E+1	2.53E+1	6.36E+1	6.51E+1
10		8.69E+1	8.90E+1	1.98E+2	1.92E+2	2.82E+1	2.77E+1	6.94E+1	7.11E+1
20		1.35E+2	1.38E+2	3.07E+2	2.98E+2	4.37E+1	4.29E+1	1.08E+2	1.10E+2
30		2.10E+2	2.15E+2	4.78E+2	4.64E+2	6.81E+1	6.68E+1	1.68E+2	1.72E+2
1-y-old									
	1	4.20E+1	5.49E+1	7.69E+1	1.03E+2	9.64E+0	1.49E+1	3.49E+1	4.51E+1
	2	4.16E+1	5.41E+1	8.21E+1	1.06E+2	1.39E+1	1.77E+1	4.06E+1	4.74E+1
	4	4.49E+1	5.77E+1	9.00E+1	1.13E+2	1.91E+1	2.07E+1	4.62E+1	5.06E+1
	8	5.40E+1	6.74E+1	1.03E+2	1.27E+2	2.30E+1	2.38E+1	5.15E+1	5.50E+1
	12	6.27E+1	7.62E+1	1.15E+2	1.39E+2	2.57E+1	2.61E+1	5.51E+1	5.83E+1
1	24	8.25E+1	9.34E+1	1.44E+2	1.64E+2	3.03E+1	3.02E+1	6.14E+1	6.40E+1
2		1.01E+2	1.07E+2	1.80E+2	1.91E+2	3.36E+1	3.31E+1	6.64E+1	6.89E+1
4		1.18E+2	1.21E+2	2.20E+2	2.21E+2	3.75E+1	3.69E+1	7.38E+1	7.65E+1
8		1.47E+2	1.50E+2	2.76E+2	2.76E+2	4.64E+1	4.56E+1	9.13E+1	9.47E+1
10		1.64E+2	1.67E+2	3.08E+2	3.07E+2	5.16E+1	5.08E+1	1.02E+2	1.05E+2
20		2.79E+2	2.85E+2	5.25E+2	5.23E+2	8.79E+1	8.66E+1	1.73E+2	1.80E+2
30		4.75E+2	4.85E+2	8.94E+2	8.92E+2	1.50E+2	1.48E+2	2.95E+2	3.06E+2
5-y-old									
	1	6.02E+1	8.82E+1	1.32E+2	1.52E+2	1.30E+1	2.08E+1	3.71E+1	5.05E+1
	2	6.03E+1	8.71E+1	1.40E+2	1.57E+2	1.99E+1	2.66E+1	4.50E+1	5.48E+1
	4	6.59E+1	9.33E+1	1.54E+2	1.69E+2	2.90E+1	3.26E+1	5.35E+1	6.03E+1
	8	8.06E+1	1.10E+2	1.78E+2	1.92E+2	3.52E+1	3.72E+1	6.19E+1	6.74E+1
	12	9.52E+1	1.26E+2	1.99E+2	2.12E+2	3.88E+1	4.02E+1	6.80E+1	7.28E+1
1	24	1.30E+2	1.56E+2	2.44E+2	2.52E+2	4.51E+1	4.52E+1	7.86E+1	8.20E+1
2		1.64E+2	1.78E+2	2.85E+2	2.90E+2	4.93E+1	4.89E+1	8.57E+1	8.86E+1
4		1.93E+2	1.99E+2	3.25E+2	3.29E+2	5.41E+1	5.36E+1	9.39E+1	9.71E+1
8		2.32E+2	2.37E+2	3.89E+2	3.93E+2	6.44E+1	6.38E+1	1.12E+2	1.16E+2
10		2.52E+2	2.57E+2	4.22E+2	4.27E+2	7.00E+1	6.93E+1	1.22E+2	1.26E+2
20		3.68E+2	3.76E+2	6.17E+2	6.24E+2	1.02E+2	1.01E+2	1.78E+2	1.84E+2
30		5.12E+2	5.22E+2	8.57E+2	8.67E+2	1.42E+2	1.41E+2	2.47E+2	2.56E+2

Table A-12 (continued)

Time post intake		Pathway/distance of detector from body/aspect							
		Inhalation: Type F				Ingestion			
d	h	Contact		1 ft		Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
10-y-old									
	1	7.43E+1	1.16E+2	1.69E+2	1.88E+2	1.91E+1	2.78E+1	4.00E+1	5.66E+1
	2	7.47E+1	1.14E+2	1.76E+2	1.93E+2	2.87E+1	3.60E+1	5.07E+1	6.40E+1
	4	8.21E+1	1.22E+2	1.93E+2	2.08E+2	4.10E+1	4.46E+1	6.28E+1	7.25E+1
	8	1.01E+2	1.45E+2	2.28E+2	2.40E+2	4.91E+1	5.11E+1	7.45E+1	8.22E+1
	12	1.21E+2	1.66E+2	2.59E+2	2.67E+2	5.39E+1	5.53E+1	8.32E+1	8.95E+1
1	24	1.71E+2	2.07E+2	3.22E+2	3.24E+2	6.20E+1	6.24E+1	9.86E+1	1.02E+2
2		2.23E+2	2.37E+2	3.74E+2	3.74E+2	6.75E+1	6.74E+1	1.08E+2	1.10E+2
4		2.64E+2	2.61E+2	4.18E+2	4.19E+2	7.33E+1	7.32E+1	1.18E+2	1.20E+2
8		3.08E+2	3.01E+2	4.82E+2	4.84E+2	8.43E+1	8.41E+1	1.36E+2	1.38E+2
10		3.27E+2	3.19E+2	5.12E+2	5.14E+2	8.95E+1	8.93E+1	1.44E+2	1.47E+2
20		4.12E+2	4.03E+2	6.46E+2	6.49E+2	1.13E+2	1.13E+2	1.82E+2	1.85E+2
30		4.90E+2	4.79E+2	7.68E+2	7.71E+2	1.35E+2	1.34E+2	2.17E+2	2.21E+2
15-y-old									
	1	1.08E+2	1.75E+2	2.19E+2	2.68E+2	3.15E+1	4.09E+1	4.60E+1	6.74E+1
	2	1.10E+2	1.73E+2	2.24E+2	2.72E+2	4.45E+1	5.27E+1	6.09E+1	7.75E+1
	4	1.21E+2	1.86E+2	2.44E+2	2.92E+2	5.93E+1	6.46E+1	7.80E+1	8.86E+1
	8	1.49E+2	2.18E+2	2.90E+2	3.34E+2	6.90E+1	7.28E+1	9.31E+1	1.01E+2
	12	1.78E+2	2.47E+2	3.31E+2	3.70E+2	7.47E+1	7.78E+1	1.04E+2	1.10E+2
1	24	2.51E+2	3.02E+2	4.15E+2	4.40E+2	8.45E+1	8.63E+1	1.23E+2	1.26E+2
2		3.24E+2	3.40E+2	4.79E+2	4.95E+2	9.09E+1	9.21E+1	1.35E+2	1.36E+2
4		3.74E+2	3.66E+2	5.22E+2	5.36E+2	9.65E+1	9.78E+1	1.43E+2	1.45E+2
8		4.05E+2	3.92E+2	5.60E+2	5.75E+2	1.03E+2	1.05E+2	1.54E+2	1.55E+2
10		4.15E+2	4.01E+2	5.72E+2	5.88E+2	1.06E+2	1.07E+2	1.57E+2	1.59E+2
20		4.51E+2	4.36E+2	6.22E+2	6.39E+2	1.15E+2	1.16E+2	1.71E+2	1.73E+2
30		4.86E+2	4.70E+2	6.71E+2	6.89E+2	1.24E+2	1.25E+2	1.84E+2	1.86E+2
Adult male									
	1	1.22E+2	1.70E+2	2.19E+2	2.51E+2	2.90E+1	3.82E+1	5.43E+1	6.12E+1
	2	1.26E+2	1.74E+2	2.42E+2	2.67E+2	4.20E+1	4.85E+1	7.08E+1	7.38E+1
	4	1.41E+2	1.92E+2	2.77E+2	2.96E+2	5.91E+1	6.05E+1	9.06E+1	8.90E+1
	8	1.75E+2	2.33E+2	3.32E+2	3.47E+2	7.47E+1	7.28E+1	1.11E+2	1.07E+2
	12	2.11E+2	2.70E+2	3.82E+2	3.90E+2	8.63E+1	8.23E+1	1.27E+2	1.22E+2
1	24	3.00E+2	3.45E+2	4.82E+2	4.72E+2	1.09E+2	9.94E+1	1.56E+2	1.48E+2
2		3.90E+2	3.91E+2	5.54E+2	5.25E+2	1.21E+2	1.09E+2	1.72E+2	1.64E+2
4		4.46E+2	4.14E+2	5.95E+2	5.58E+2	1.28E+2	1.15E+2	1.81E+2	1.72E+2
8		4.77E+2	4.38E+2	6.30E+2	5.89E+2	1.35E+2	1.21E+2	1.91E+2	1.82E+2
10		4.86E+2	4.45E+2	6.42E+2	6.00E+2	1.37E+2	1.23E+2	1.95E+2	1.85E+2
20		5.21E+2	4.77E+2	6.87E+2	6.42E+2	1.47E+2	1.32E+2	2.09E+2	1.98E+2
30		5.55E+2	5.09E+2	7.32E+2	6.85E+2	1.56E+2	1.41E+2	2.22E+2	2.11E+2
Adult female									
	1	1.16E+2	1.44E+2	2.18E+2	2.20E+2	2.91E+1	3.24E+1	5.19E+1	6.99E+1
	2	1.20E+2	1.46E+2	2.34E+2	2.34E+2	3.98E+1	4.29E+1	6.72E+1	8.06E+1
	4	1.33E+2	1.62E+2	2.63E+2	2.61E+2	5.33E+1	5.53E+1	8.56E+1	9.42E+1
	8	1.65E+2	2.01E+2	3.13E+2	3.11E+2	6.66E+1	6.71E+1	1.05E+2	1.12E+2
	12	1.97E+2	2.39E+2	3.58E+2	3.55E+2	7.69E+1	7.59E+1	1.20E+2	1.27E+2
1	24	2.77E+2	3.20E+2	4.51E+2	4.45E+2	9.66E+1	9.19E+1	1.48E+2	1.54E+2
2		3.59E+2	3.73E+2	5.19E+2	5.10E+2	1.08E+2	1.01E+2	1.64E+2	1.70E+2
4		4.11E+2	3.98E+2	5.60E+2	5.50E+2	1.14E+2	1.06E+2	1.73E+2	1.79E+2
8		4.40E+2	4.20E+2	5.93E+2	5.82E+2	1.20E+2	1.12E+2	1.83E+2	1.89E+2
10		4.48E+2	4.28E+2	6.03E+2	5.92E+2	1.22E+2	1.14E+2	1.86E+2	1.92E+2
20		4.80E+2	4.58E+2	6.46E+2	6.34E+2	1.31E+2	1.22E+2	1.99E+2	2.06E+2
30		5.11E+2	4.88E+2	6.89E+2	6.76E+2	1.39E+2	1.30E+2	2.12E+2	2.19E+2

Table A-13. Inhaled Activity of ¹⁹²Ir vs. Count Rate on Captus 3000 (Bq/cpm)

Time post intake		Pathway/distance of detector from chest/aspect							
		Inhalation: Type <i>F</i>				Inhalation: Type <i>M</i>			
d	h	Contact		1 ft		Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	1.33E+1	1.37E+1	1.85E+1	2.82E+1	1.35E+1	1.16E+1	1.76E+1	2.66E+1
	2	1.47E+1	1.53E+1	1.93E+1	2.88E+1	1.52E+1	1.31E+1	1.86E+1	2.68E+1
	4	1.67E+1	1.74E+1	2.06E+1	3.02E+1	1.66E+1	1.43E+1	1.98E+1	2.77E+1
	8	1.99E+1	2.05E+1	2.30E+1	3.30E+1	1.77E+1	1.52E+1	2.18E+1	3.00E+1
	12	2.29E+1	2.34E+1	2.56E+1	3.58E+1	1.85E+1	1.59E+1	2.41E+1	3.25E+1
1	24	2.92E+1	3.01E+1	3.41E+1	4.43E+1	2.07E+1	1.79E+1	3.30E+1	4.14E+1
2		3.46E+1	3.67E+1	5.18E+1	6.01E+1	2.31E+1	2.03E+1	5.68E+1	6.27E+1
4		3.84E+1	4.16E+1	7.43E+1	7.81E+1	2.54E+1	2.24E+1	9.76E+1	9.34E+1
8		4.27E+1	4.63E+1	8.73E+1	8.97E+1	2.80E+1	2.47E+1	1.19E+2	1.10E+2
10		4.46E+1	4.84E+1	9.14E+1	9.39E+1	2.92E+1	2.58E+1	1.24E+2	1.15E+2
20		5.38E+1	5.84E+1	1.11E+2	1.14E+2	3.61E+1	3.20E+1	1.52E+2	1.40E+2
30		6.28E+1	6.83E+1	1.29E+2	1.33E+2	4.40E+1	3.91E+1	1.82E+2	1.68E+2
1-y-old									
	1	2.11E+1	2.48E+1	2.75E+1	4.05E+1	2.06E+1	1.98E+1	2.54E+1	3.61E+1
	2	2.31E+1	2.74E+1	2.98E+1	4.27E+1	2.19E+1	2.13E+1	2.86E+1	3.84E+1
	4	2.67E+1	3.13E+1	3.24E+1	4.55E+1	2.31E+1	2.25E+1	3.13E+1	4.07E+1
	8	3.38E+1	3.84E+1	3.64E+1	5.03E+1	2.45E+1	2.36E+1	3.43E+1	4.41E+1
	12	4.10E+1	4.53E+1	4.07E+1	5.52E+1	2.56E+1	2.46E+1	3.80E+1	4.79E+1
1	24	5.92E+1	6.14E+1	5.43E+1	6.86E+1	2.82E+1	2.68E+1	5.13E+1	5.98E+1
2		7.58E+1	7.56E+1	7.76E+1	8.81E+1	3.12E+1	2.92E+1	7.82E+1	8.01E+1
4		8.61E+1	8.49E+1	1.01E+2	1.06E+2	3.39E+1	3.16E+1	1.08E+2	9.94E+1
8		9.59E+1	9.44E+1	1.15E+2	1.19E+2	3.73E+1	3.47E+1	1.23E+2	1.12E+2
10		1.00E+2	9.87E+1	1.21E+2	1.25E+2	3.90E+1	3.63E+1	1.28E+2	1.16E+2
20		1.21E+2	1.19E+2	1.46E+2	1.51E+2	4.82E+1	4.50E+1	1.56E+2	1.42E+2
30		1.41E+2	1.39E+2	1.70E+2	1.76E+2	5.89E+1	5.50E+1	1.88E+2	1.71E+2
5-y-old									
	1	3.12E+1	3.98E+1	5.18E+1	6.10E+1	3.04E+1	2.91E+1	4.49E+1	5.12E+1
	2	3.43E+1	4.38E+1	5.83E+1	6.61E+1	3.23E+1	3.08E+1	5.33E+1	5.63E+1
	4	4.02E+1	5.06E+1	6.53E+1	7.20E+1	3.41E+1	3.23E+1	6.03E+1	6.05E+1
	8	5.27E+1	6.39E+1	7.43E+1	8.11E+1	3.61E+1	3.39E+1	6.50E+1	6.45E+1
	12	6.63E+1	7.74E+1	8.28E+1	8.97E+1	3.77E+1	3.52E+1	6.96E+1	6.85E+1
1	24	1.03E+2	1.10E+2	1.04E+2	1.11E+2	4.14E+1	3.81E+1	8.28E+1	7.98E+1
2		1.39E+2	1.38E+2	1.30E+2	1.35E+2	4.54E+1	4.11E+1	1.01E+2	9.48E+1
4		1.59E+2	1.54E+2	1.50E+2	1.55E+2	4.89E+1	4.40E+1	1.16E+2	1.07E+2
8		1.77E+2	1.72E+2	1.67E+2	1.73E+2	5.39E+1	4.84E+1	1.28E+2	1.18E+2
10		1.85E+2	1.79E+2	1.75E+2	1.81E+2	5.63E+1	5.06E+1	1.34E+2	1.24E+2
20		2.23E+2	2.16E+2	2.11E+2	2.18E+2	6.98E+1	6.29E+1	1.63E+2	1.52E+2
30		2.61E+2	2.53E+2	2.47E+2	2.55E+2	8.56E+1	7.73E+1	1.97E+2	1.84E+2

Table A-13 (continued)

Time post intake		Pathway/distance of detector from chest/aspect							
		Inhalation: Type <i>F</i>				Inhalation: Type <i>M</i>			
d	h	Contact		1 ft		Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
10-y-old									
	1	4.23E+1	5.63E+1	6.93E+1	7.99E+1	4.44E+1	4.63E+1	6.06E+1	6.40E+1
	2	4.65E+1	6.19E+1	7.87E+1	8.82E+1	4.75E+1	4.92E+1	7.16E+1	7.15E+1
	4	5.45E+1	7.15E+1	8.98E+1	9.80E+1	5.05E+1	5.20E+1	8.08E+1	7.75E+1
	8	7.17E+1	9.06E+1	1.05E+2	1.13E+2	5.39E+1	5.50E+1	8.65E+1	8.22E+1
	12	9.05E+1	1.10E+2	1.20E+2	1.26E+2	5.67E+1	5.73E+1	9.12E+1	8.64E+1
1	24	1.43E+2	1.56E+2	1.52E+2	1.57E+2	6.29E+1	6.21E+1	1.03E+2	9.72E+1
2		1.94E+2	1.95E+2	1.84E+2	1.89E+2	6.95E+1	6.71E+1	1.17E+2	1.10E+2
4		2.23E+2	2.17E+2	2.07E+2	2.14E+2	7.54E+1	7.19E+1	1.29E+2	1.21E+2
8		2.49E+2	2.41E+2	2.30E+2	2.38E+2	8.32E+1	7.92E+1	1.42E+2	1.34E+2
10		2.60E+2	2.52E+2	2.41E+2	2.49E+2	8.71E+1	8.29E+1	1.49E+2	1.40E+2
20		3.14E+2	3.04E+2	2.91E+2	3.01E+2	1.09E+2	1.03E+2	1.83E+2	1.72E+2
30		3.67E+2	3.55E+2	3.39E+2	3.51E+2	1.34E+2	1.27E+2	2.22E+2	2.09E+2
15-y-old									
	1	5.86E+1	8.41E+1	8.99E+1	1.16E+2	6.11E+1	6.58E+1	7.72E+1	8.00E+1
	2	6.43E+1	9.22E+1	9.99E+1	1.27E+2	6.53E+1	6.99E+1	8.59E+1	8.68E+1
	4	7.56E+1	1.06E+2	1.14E+2	1.43E+2	6.99E+1	7.43E+1	9.34E+1	9.26E+1
	8	1.00E+2	1.34E+2	1.38E+2	1.67E+2	7.51E+1	7.88E+1	9.92E+1	9.74E+1
	12	1.27E+2	1.62E+2	1.60E+2	1.89E+2	7.90E+1	8.20E+1	1.04E+2	1.01E+2
1	24	2.03E+2	2.27E+2	2.10E+2	2.37E+2	8.72E+1	8.83E+1	1.13E+2	1.09E+2
2		2.75E+2	2.77E+2	2.52E+2	2.78E+2	9.56E+1	9.46E+1	1.24E+2	1.19E+2
4		3.13E+2	3.05E+2	2.79E+2	3.07E+2	1.03E+2	1.01E+2	1.33E+2	1.27E+2
8		3.49E+2	3.38E+2	3.09E+2	3.40E+2	1.14E+2	1.12E+2	1.46E+2	1.40E+2
10		3.64E+2	3.53E+2	3.23E+2	3.56E+2	1.20E+2	1.17E+2	1.53E+2	1.46E+2
20		4.40E+2	4.26E+2	3.90E+2	4.29E+2	1.50E+2	1.47E+2	1.89E+2	1.80E+2
30		5.13E+2	4.97E+2	4.55E+2	5.01E+2	1.86E+2	1.81E+2	2.31E+2	2.20E+2
Adult male									
	1	6.15E+1	7.87E+1	8.43E+1	1.01E+2	4.20E+1	5.37E+1	5.75E+1	6.01E+1
	2	6.88E+1	8.81E+1	9.63E+1	1.11E+2	4.53E+1	5.84E+1	6.66E+1	6.85E+1
	4	8.01E+1	1.02E+2	1.09E+2	1.24E+2	4.83E+1	6.25E+1	7.47E+1	7.64E+1
	8	1.02E+2	1.27E+2	1.26E+2	1.40E+2	5.11E+1	6.61E+1	8.03E+1	8.25E+1
	12	1.24E+2	1.50E+2	1.40E+2	1.54E+2	5.33E+1	6.86E+1	8.44E+1	8.63E+1
1	24	1.79E+2	2.03E+2	1.71E+2	1.85E+2	5.80E+1	7.37E+1	9.45E+1	9.35E+1
2		2.32E+2	2.46E+2	2.05E+2	2.18E+2	6.32E+1	7.93E+1	1.07E+2	1.01E+2
4		2.65E+2	2.73E+2	2.33E+2	2.47E+2	6.81E+1	8.49E+1	1.19E+2	1.08E+2
8		2.96E+2	3.04E+2	2.61E+2	2.76E+2	7.50E+1	9.33E+1	1.32E+2	1.19E+2
10		3.10E+2	3.17E+2	2.72E+2	2.88E+2	7.84E+1	9.75E+1	1.37E+2	1.24E+2
20		3.74E+2	3.83E+2	3.29E+2	3.48E+2	9.74E+1	1.21E+2	1.69E+2	1.52E+2
30		4.37E+2	4.48E+2	3.84E+2	4.07E+2	1.20E+2	1.47E+2	2.06E+2	1.85E+2
Adult female									
	1	5.99E+1	6.45E+1	8.62E+1	8.85E+1	4.07E+1	4.19E+1	6.26E+1	7.08E+1
	2	6.69E+1	7.25E+1	9.85E+1	1.01E+2	4.36E+1	4.50E+1	7.32E+1	7.82E+1
	4	7.83E+1	8.57E+1	1.13E+2	1.16E+2	4.63E+1	4.80E+1	8.34E+1	8.52E+1
	8	1.01E+2	1.11E+2	1.31E+2	1.36E+2	4.90E+1	5.07E+1	9.08E+1	9.12E+1
	12	1.24E+2	1.37E+2	1.45E+2	1.53E+2	5.09E+1	5.25E+1	9.53E+1	9.56E+1
1	24	1.82E+2	2.00E+2	1.73E+2	1.87E+2	5.48E+1	5.57E+1	1.04E+2	1.06E+2
2		2.34E+2	2.49E+2	1.97E+2	2.15E+2	5.87E+1	5.89E+1	1.13E+2	1.20E+2
4		2.64E+2	2.74E+2	2.16E+2	2.37E+2	6.27E+1	6.25E+1	1.22E+2	1.34E+2
8		2.94E+2	3.04E+2	2.40E+2	2.63E+2	6.88E+1	6.86E+1	1.33E+2	1.47E+2
10		3.07E+2	3.17E+2	2.51E+2	2.75E+2	7.19E+1	7.18E+1	1.39E+2	1.54E+2
20		3.71E+2	3.83E+2	3.02E+2	3.31E+2	8.91E+1	8.92E+1	1.71E+2	1.88E+2
30		4.33E+2	4.47E+2	3.53E+2	3.87E+2	1.09E+2	1.09E+2	2.08E+2	2.29E+2

Table A-14. Intake of ¹⁹²Ir vs. Count Rate on Captus 3000 (Bq/cpm)

Time post intake		Pathway/distance of detector from body/aspect							
		Inhalation: Type S				Ingestion			
d	h	Contact		1 ft		Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	1.35E+1	1.14E+1	1.75E+1	2.64E+1	1.91E+0	2.72E+0	9.36E+0	1.20E+1
	2	1.53E+1	1.29E+1	1.85E+1	2.66E+1	2.09E+0	2.73E+0	9.65E+0	1.17E+1
	4	1.66E+1	1.40E+1	1.97E+1	2.75E+1	2.28E+0	2.89E+0	9.87E+0	1.17E+1
	8	1.75E+1	1.47E+1	2.17E+1	2.97E+1	2.61E+0	3.37E+0	1.03E+1	1.22E+1
	12	1.82E+1	1.54E+1	2.40E+1	3.21E+1	3.06E+0	3.97E+0	1.09E+1	1.29E+1
1	24	2.00E+1	1.71E+1	3.29E+1	4.10E+1	5.20E+0	6.55E+0	1.46E+1	1.69E+1
2		2.22E+1	1.92E+1	5.73E+1	6.29E+1	1.46E+1	1.74E+1	3.23E+1	3.66E+1
4		2.41E+1	2.10E+1	1.00E+2	9.47E+1	8.38E+1	9.43E+1	1.82E+2	2.02E+2
8		2.62E+1	2.28E+1	1.22E+2	1.11E+2	2.87E+2	3.01E+2	9.58E+2	1.01E+3
10		2.72E+1	2.36E+1	1.27E+2	1.15E+2	3.12E+2	3.26E+2	1.07E+3	1.12E+3
20		3.24E+1	2.82E+1	1.52E+2	1.37E+2	3.80E+2	3.97E+2	1.32E+3	1.38E+3
30		3.82E+1	3.33E+1	1.79E+2	1.62E+2	4.45E+2	4.64E+2	1.54E+3	1.61E+3
1-y-old									
	1	2.06E+1	1.94E+1	2.52E+1	3.57E+1	2.88E+0	4.46E+0	9.74E+0	1.34E+1
	2	2.18E+1	2.08E+1	2.84E+1	3.80E+1	3.58E+0	4.71E+0	1.02E+1	1.30E+1
	4	2.28E+1	2.18E+1	3.11E+1	4.03E+1	4.10E+0	5.08E+0	1.04E+1	1.31E+1
	8	2.37E+1	2.26E+1	3.41E+1	4.35E+1	4.64E+0	5.95E+0	1.10E+1	1.39E+1
	12	2.45E+1	2.33E+1	3.77E+1	4.71E+1	5.53E+0	7.13E+0	1.18E+1	1.48E+1
1	24	2.66E+1	2.51E+1	5.10E+1	5.89E+1	1.03E+1	1.26E+1	1.64E+1	1.97E+1
2		2.91E+1	2.72E+1	7.80E+1	7.90E+1	3.45E+1	3.75E+1	3.78E+1	4.35E+1
4		3.13E+1	2.91E+1	1.07E+2	9.77E+1	2.33E+2	2.35E+2	2.37E+2	2.65E+2
8		3.38E+1	3.14E+1	1.22E+2	1.08E+2	8.45E+2	9.19E+2	2.20E+3	2.28E+3
10		3.51E+1	3.26E+1	1.26E+2	1.12E+2	9.18E+2	1.00E+3	2.65E+3	2.70E+3
20		4.17E+1	3.87E+1	1.50E+2	1.33E+2	1.12E+3	1.22E+3	3.29E+3	3.35E+3
30		4.90E+1	4.55E+1	1.76E+2	1.56E+2	1.31E+3	1.43E+3	3.85E+3	3.93E+3
5-y-old									
	1	3.04E+1	2.82E+1	4.43E+1	5.03E+1	4.42E+0	7.18E+0	9.97E+0	1.42E+1
	2	3.21E+1	2.98E+1	5.28E+1	5.54E+1	6.34E+0	8.26E+0	1.07E+1	1.40E+1
	4	3.35E+1	3.11E+1	5.97E+1	5.94E+1	7.90E+0	9.01E+0	1.12E+1	1.44E+1
	8	3.48E+1	3.23E+1	6.41E+1	6.30E+1	8.69E+0	1.01E+1	1.22E+1	1.60E+1
	12	3.60E+1	3.32E+1	6.83E+1	6.67E+1	1.02E+1	1.20E+1	1.36E+1	1.78E+1
1	24	3.88E+1	3.54E+1	8.09E+1	7.73E+1	1.90E+1	2.21E+1	2.01E+1	2.55E+1
2		4.19E+1	3.78E+1	9.82E+1	9.13E+1	6.41E+1	7.10E+1	4.92E+1	6.01E+1
4		4.48E+1	4.01E+1	1.12E+2	1.02E+2	4.09E+2	4.42E+2	3.14E+2	3.70E+2
8		4.84E+1	4.33E+1	1.22E+2	1.11E+2	1.23E+3	1.41E+3	2.62E+3	2.75E+3
10		5.02E+1	4.50E+1	1.26E+2	1.16E+2	1.32E+3	1.52E+3	3.10E+3	3.20E+3
20		5.97E+1	5.36E+1	1.50E+2	1.37E+2	1.61E+3	1.85E+3	3.84E+3	3.95E+3
30		7.02E+1	6.32E+1	1.76E+2	1.61E+2	1.88E+3	2.16E+3	4.49E+3	4.62E+3

Table A-14 (continued)

Time post intake		Pathway/distance of detector from body/aspect							
		Inhalation: Type S				Ingestion			
d	h	Contact		1 ft		Contact		1 ft	
		Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
10-y-old									
	1	4.47E+1	4.54E+1	5.97E+1	6.26E+1	6.93E+0	1.07E+1	1.10E+1	1.59E+1
	2	4.76E+1	4.81E+1	7.09E+1	7.00E+1	1.06E+1	1.34E+1	1.20E+1	1.59E+1
	4	5.01E+1	5.05E+1	7.99E+1	7.58E+1	1.44E+1	1.53E+1	1.28E+1	1.67E+1
	8	5.25E+1	5.27E+1	8.48E+1	7.98E+1	1.67E+1	1.71E+1	1.41E+1	1.92E+1
	12	5.44E+1	5.44E+1	8.88E+1	8.34E+1	1.96E+1	2.01E+1	1.62E+1	2.23E+1
1	24	5.91E+1	5.80E+1	9.92E+1	9.31E+1	3.52E+1	3.65E+1	2.61E+1	3.49E+1
2		6.45E+1	6.21E+1	1.12E+2	1.05E+2	1.09E+2	1.15E+2	7.06E+1	8.87E+1
4		6.92E+1	6.59E+1	1.23E+2	1.14E+2	6.15E+2	6.75E+2	4.64E+2	5.49E+2
8		7.50E+1	7.14E+1	1.33E+2	1.24E+2	1.70E+3	1.94E+3	3.13E+3	3.19E+3
10		7.79E+1	7.41E+1	1.38E+2	1.28E+2	1.82E+3	2.09E+3	3.59E+3	3.61E+3
20		9.33E+1	8.86E+1	1.64E+2	1.52E+2	2.21E+3	2.54E+3	4.42E+3	4.43E+3
30		1.10E+2	1.05E+2	1.92E+2	1.79E+2	2.59E+3	2.97E+3	5.17E+3	5.18E+3
15-y-old									
	1	6.14E+1	6.42E+1	7.60E+1	7.73E+1	1.21E+1	1.75E+1	1.35E+1	2.05E+1
	2	6.54E+1	6.81E+1	8.46E+1	8.39E+1	1.80E+1	2.31E+1	1.55E+1	2.08E+1
	4	6.93E+1	7.19E+1	9.15E+1	8.91E+1	2.40E+1	2.75E+1	1.66E+1	2.20E+1
	8	7.31E+1	7.54E+1	9.61E+1	9.30E+1	2.75E+1	3.07E+1	1.82E+1	2.56E+1
	12	7.58E+1	7.77E+1	9.95E+1	9.60E+1	3.23E+1	3.59E+1	2.11E+1	3.02E+1
1	24	8.19E+1	8.24E+1	1.08E+2	1.03E+2	5.74E+1	6.38E+1	3.66E+1	5.10E+1
2		8.86E+1	8.75E+1	1.16E+2	1.11E+2	1.74E+2	1.94E+2	1.09E+2	1.41E+2
4		9.47E+1	9.27E+1	1.24E+2	1.18E+2	9.72E+2	1.08E+3	7.34E+2	8.75E+2
8		1.03E+2	1.01E+2	1.34E+2	1.27E+2	2.67E+3	2.92E+3	3.84E+3	3.96E+3
10		1.07E+2	1.05E+2	1.39E+2	1.32E+2	2.87E+3	3.13E+3	4.29E+3	4.37E+3
20		1.29E+2	1.26E+2	1.66E+2	1.57E+2	3.48E+3	3.80E+3	5.26E+3	5.33E+3
30		1.54E+2	1.50E+2	1.96E+2	1.85E+2	4.07E+3	4.45E+3	6.16E+3	6.24E+3
Adult male									
	1	4.05E+1	5.19E+1	5.56E+1	6.85E+1	9.58E+0	1.35E+1	1.47E+1	2.22E+1
	2	4.36E+1	5.63E+1	6.45E+1	7.58E+1	1.28E+1	1.66E+1	1.56E+1	2.66E+1
	4	4.63E+1	6.00E+1	7.22E+1	8.24E+1	1.64E+1	2.09E+1	1.59E+1	3.21E+1
	8	4.85E+1	6.27E+1	7.72E+1	8.78E+1	2.04E+1	2.75E+1	1.70E+1	3.98E+1
	12	5.01E+1	6.46E+1	8.08E+1	9.17E+1	2.50E+1	3.46E+1	1.97E+1	4.81E+1
1	24	5.38E+1	6.86E+1	8.98E+1	1.01E+2	4.68E+1	6.29E+1	3.49E+1	8.21E+1
2		5.81E+1	7.32E+1	1.01E+2	1.14E+2	1.48E+2	1.83E+2	1.08E+2	2.25E+2
4		6.20E+1	7.77E+1	1.12E+2	1.25E+2	8.81E+2	1.04E+3	7.70E+2	1.28E+3
8		6.70E+1	8.39E+1	1.21E+2	1.36E+2	2.58E+3	3.25E+3	4.49E+3	4.38E+3
10		6.95E+1	8.69E+1	1.26E+2	1.41E+2	2.78E+3	3.50E+3	5.06E+3	4.74E+3
20		8.28E+1	1.03E+2	1.49E+2	1.67E+2	3.38E+3	4.26E+3	6.22E+3	5.77E+3
30		9.75E+1	1.21E+2	1.76E+2	1.96E+2	3.95E+3	4.98E+3	7.28E+3	6.75E+3
Adult female									
	1	3.93E+1	4.04E+1	6.08E+1	5.81E+1	1.13E+1	1.33E+1	1.54E+1	2.18E+1
	2	4.20E+1	4.32E+1	7.12E+1	6.62E+1	1.72E+1	2.00E+1	1.82E+1	2.34E+1
	4	4.43E+1	4.57E+1	8.11E+1	7.37E+1	2.82E+1	3.22E+1	2.19E+1	2.64E+1
	8	4.63E+1	4.78E+1	8.78E+1	7.90E+1	4.55E+1	5.16E+1	2.78E+1	3.21E+1
	12	4.77E+1	4.91E+1	9.18E+1	8.22E+1	6.21E+1	6.99E+1	3.44E+1	3.78E+1
1	24	5.07E+1	5.15E+1	9.94E+1	8.83E+1	1.15E+2	1.27E+2	6.20E+1	5.95E+1
2		5.38E+1	5.39E+1	1.07E+2	9.47E+1	2.96E+2	3.24E+2	1.83E+2	1.50E+2
4		5.69E+1	5.67E+1	1.15E+2	1.01E+2	1.11E+3	1.32E+3	1.11E+3	8.97E+2
8		6.13E+1	6.11E+1	1.24E+2	1.09E+2	2.03E+3	2.65E+3	4.07E+3	4.62E+3
10		6.35E+1	6.34E+1	1.28E+2	1.12E+2	2.15E+3	2.81E+3	4.43E+3	5.16E+3
20		7.55E+1	7.54E+1	1.52E+2	1.33E+2	2.60E+3	3.41E+3	5.40E+3	6.31E+3
30		8.87E+1	8.88E+1	1.79E+2	1.56E+2	3.04E+3	3.98E+3	6.32E+3	7.38E+3

Table A-15. Inhaled Activity of ⁶⁰Co vs. Count Rate on TPM-903B Portal Monitor (Bq/cpm)

Time post intake		Pathway/model/low-energy threshold							
		Inhalation: Type M				Inhalation: Type S			
d	h	Standard width		Extra wide		Standard width		Extra wide	
		22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV
Infant									
	1	1.20E+0	1.25E+0	1.52E+0	1.58E+0	1.20E+0	1.25E+0	1.51E+0	1.58E+0
	2	1.22E+0	1.27E+0	1.55E+0	1.62E+0	1.22E+0	1.27E+0	1.54E+0	1.61E+0
	4	1.26E+0	1.32E+0	1.60E+0	1.67E+0	1.26E+0	1.31E+0	1.60E+0	1.67E+0
	8	1.36E+0	1.41E+0	1.72E+0	1.79E+0	1.34E+0	1.40E+0	1.70E+0	1.77E+0
	12	1.47E+0	1.53E+0	1.85E+0	1.94E+0	1.44E+0	1.50E+0	1.82E+0	1.90E+0
1	24	1.89E+0	1.97E+0	2.38E+0	2.49E+0	1.85E+0	1.93E+0	2.33E+0	2.44E+0
2		3.04E+0	3.18E+0	3.83E+0	4.00E+0	3.13E+0	3.26E+0	3.92E+0	4.11E+0
4		5.08E+0	5.29E+0	6.40E+0	6.68E+0	5.75E+0	5.99E+0	7.24E+0	7.56E+0
8		6.24E+0	6.49E+0	7.86E+0	8.20E+0	7.00E+0	7.28E+0	8.82E+0	9.20E+0
10		6.51E+0	6.77E+0	8.20E+0	8.56E+0	7.16E+0	7.45E+0	9.03E+0	9.42E+0
20		7.66E+0	7.97E+0	9.65E+0	1.01E+1	7.86E+0	8.17E+0	9.90E+0	1.03E+1
30		8.66E+0	9.01E+0	1.09E+1	1.14E+1	8.49E+0	8.84E+0	1.07E+1	1.12E+1
1-y-old									
	1	1.06E+0	1.11E+0	1.36E+0	1.43E+0	1.06E+0	1.11E+0	1.36E+0	1.42E+0
	2	1.09E+0	1.14E+0	1.39E+0	1.45E+0	1.08E+0	1.13E+0	1.39E+0	1.45E+0
	4	1.12E+0	1.18E+0	1.44E+0	1.50E+0	1.12E+0	1.17E+0	1.43E+0	1.50E+0
	8	1.20E+0	1.26E+0	1.53E+0	1.61E+0	1.19E+0	1.25E+0	1.52E+0	1.59E+0
	12	1.30E+0	1.36E+0	1.65E+0	1.73E+0	1.28E+0	1.34E+0	1.63E+0	1.71E+0
1	24	1.67E+0	1.74E+0	2.11E+0	2.22E+0	1.64E+0	1.72E+0	2.08E+0	2.18E+0
2		2.72E+0	2.84E+0	3.44E+0	3.61E+0	2.73E+0	2.86E+0	3.45E+0	3.62E+0
4		4.64E+0	4.85E+0	5.88E+0	6.15E+0	4.87E+0	5.08E+0	6.17E+0	6.45E+0
8		5.67E+0	5.91E+0	7.17E+0	7.50E+0	5.84E+0	6.08E+0	7.40E+0	7.72E+0
10		5.88E+0	6.13E+0	7.45E+0	7.78E+0	5.96E+0	6.21E+0	7.56E+0	7.89E+0
20		6.80E+0	7.09E+0	8.61E+0	9.00E+0	6.49E+0	6.76E+0	8.23E+0	8.59E+0
30		7.64E+0	7.96E+0	9.67E+0	1.01E+1	6.98E+0	7.28E+0	8.85E+0	9.24E+0
5-y-old									
	1	1.13E+0	1.18E+0	1.45E+0	1.52E+0	1.13E+0	1.18E+0	1.44E+0	1.51E+0
	2	1.15E+0	1.20E+0	1.47E+0	1.54E+0	1.14E+0	1.20E+0	1.46E+0	1.53E+0
	4	1.18E+0	1.24E+0	1.51E+0	1.58E+0	1.18E+0	1.23E+0	1.50E+0	1.58E+0
	8	1.26E+0	1.32E+0	1.60E+0	1.68E+0	1.24E+0	1.30E+0	1.59E+0	1.67E+0
	12	1.35E+0	1.41E+0	1.72E+0	1.80E+0	1.33E+0	1.39E+0	1.69E+0	1.77E+0
1	24	1.70E+0	1.78E+0	2.16E+0	2.27E+0	1.66E+0	1.75E+0	2.11E+0	2.22E+0
2		2.67E+0	2.80E+0	3.38E+0	3.55E+0	2.66E+0	2.79E+0	3.37E+0	3.53E+0
4		4.32E+0	4.52E+0	5.48E+0	5.73E+0	4.44E+0	4.65E+0	5.63E+0	5.90E+0
8		5.17E+0	5.40E+0	6.55E+0	6.86E+0	5.21E+0	5.45E+0	6.61E+0	6.91E+0
10		5.36E+0	5.60E+0	6.79E+0	7.11E+0	5.32E+0	5.56E+0	6.75E+0	7.05E+0
20		6.17E+0	6.45E+0	7.83E+0	8.19E+0	5.79E+0	6.05E+0	7.35E+0	7.68E+0
30		6.93E+0	7.24E+0	8.79E+0	9.19E+0	6.23E+0	6.51E+0	7.90E+0	8.26E+0

Table A-15 (continued)

Time post intake		Pathway/model/low-energy threshold							
		Inhalation: Type M				Inhalation: Type S			
d	h	Standard width		Extra wide		Standard width		Extra wide	
		22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV
10-y-old									
	1	1.10E+0	1.16E+0	1.41E+0	1.48E+0	1.10E+0	1.16E+0	1.40E+0	1.48E+0
	2	1.12E+0	1.17E+0	1.42E+0	1.50E+0	1.11E+0	1.17E+0	1.42E+0	1.50E+0
	4	1.15E+0	1.21E+0	1.46E+0	1.54E+0	1.14E+0	1.20E+0	1.46E+0	1.53E+0
	8	1.22E+0	1.28E+0	1.55E+0	1.64E+0	1.21E+0	1.27E+0	1.53E+0	1.62E+0
	12	1.31E+0	1.38E+0	1.66E+0	1.75E+0	1.29E+0	1.35E+0	1.63E+0	1.72E+0
1	24	1.65E+0	1.74E+0	2.09E+0	2.20E+0	1.61E+0	1.70E+0	2.04E+0	2.16E+0
2		2.62E+0	2.76E+0	3.31E+0	3.48E+0	2.61E+0	2.75E+0	3.29E+0	3.47E+0
4		4.32E+0	4.54E+0	5.46E+0	5.73E+0	4.47E+0	4.69E+0	5.64E+0	5.92E+0
8		5.21E+0	5.47E+0	6.59E+0	6.91E+0	5.29E+0	5.54E+0	6.68E+0	7.00E+0
10		5.41E+0	5.67E+0	6.83E+0	7.16E+0	5.40E+0	5.66E+0	6.82E+0	7.15E+0
20		6.24E+0	6.54E+0	7.89E+0	8.27E+0	5.88E+0	6.16E+0	7.43E+0	7.79E+0
30		7.01E+0	7.35E+0	8.86E+0	9.29E+0	6.33E+0	6.63E+0	8.00E+0	8.38E+0
15-y-old									
	1	1.29E+0	1.37E+0	1.64E+0	1.74E+0	1.29E+0	1.36E+0	1.64E+0	1.73E+0
	2	1.31E+0	1.38E+0	1.66E+0	1.75E+0	1.30E+0	1.38E+0	1.65E+0	1.75E+0
	4	1.34E+0	1.41E+0	1.69E+0	1.79E+0	1.33E+0	1.40E+0	1.68E+0	1.78E+0
	8	1.41E+0	1.49E+0	1.78E+0	1.89E+0	1.39E+0	1.47E+0	1.76E+0	1.87E+0
	12	1.49E+0	1.58E+0	1.89E+0	2.00E+0	1.47E+0	1.55E+0	1.86E+0	1.97E+0
1	24	1.83E+0	1.94E+0	2.31E+0	2.46E+0	1.79E+0	1.90E+0	2.26E+0	2.40E+0
2		2.73E+0	2.90E+0	3.45E+0	3.66E+0	2.70E+0	2.87E+0	3.41E+0	3.62E+0
4		4.15E+0	4.38E+0	5.23E+0	5.53E+0	4.20E+0	4.43E+0	5.30E+0	5.60E+0
8		4.86E+0	5.13E+0	6.13E+0	6.47E+0	4.83E+0	5.09E+0	6.09E+0	6.42E+0
10		5.03E+0	5.30E+0	6.35E+0	6.70E+0	4.93E+0	5.19E+0	6.21E+0	6.55E+0
20		5.80E+0	6.11E+0	7.31E+0	7.71E+0	5.38E+0	5.67E+0	6.78E+0	7.15E+0
30		6.51E+0	6.86E+0	8.21E+0	8.66E+0	5.80E+0	6.11E+0	7.31E+0	7.71E+0
Adult male									
	1	1.30E+0	1.37E+0	1.66E+0	1.76E+0	1.29E+0	1.37E+0	1.66E+0	1.64E+0
	2	1.30E+0	1.38E+0	1.66E+0	1.76E+0	1.30E+0	1.38E+0	1.66E+0	1.64E+0
	4	1.33E+0	1.41E+0	1.69E+0	1.80E+0	1.32E+0	1.40E+0	1.68E+0	1.67E+0
	8	1.40E+0	1.49E+0	1.78E+0	1.89E+0	1.38E+0	1.47E+0	1.76E+0	1.74E+0
	12	1.49E+0	1.58E+0	1.88E+0	2.00E+0	1.46E+0	1.55E+0	1.85E+0	1.84E+0
1	24	1.82E+0	1.93E+0	2.30E+0	2.44E+0	1.78E+0	1.89E+0	2.25E+0	2.24E+0
2		2.70E+0	2.87E+0	3.41E+0	3.63E+0	2.67E+0	2.84E+0	3.37E+0	3.40E+0
4		4.06E+0	4.31E+0	5.14E+0	5.46E+0	4.10E+0	4.36E+0	5.21E+0	5.30E+0
8		4.74E+0	5.03E+0	6.01E+0	6.38E+0	4.69E+0	4.98E+0	5.96E+0	6.09E+0
10		4.90E+0	5.20E+0	6.22E+0	6.60E+0	4.78E+0	5.08E+0	6.08E+0	6.22E+0
20		5.62E+0	5.97E+0	7.14E+0	7.58E+0	5.20E+0	5.52E+0	6.61E+0	6.76E+0
30		6.30E+0	6.68E+0	7.99E+0	8.49E+0	5.59E+0	5.94E+0	7.11E+0	7.28E+0
Adult female									
	1	1.21E+0	1.28E+0	1.55E+0	1.64E+0	1.21E+0	1.28E+0	1.54E+0	1.75E+0
	2	1.22E+0	1.29E+0	1.55E+0	1.65E+0	1.21E+0	1.28E+0	1.55E+0	1.76E+0
	4	1.24E+0	1.31E+0	1.58E+0	1.68E+0	1.23E+0	1.30E+0	1.57E+0	1.78E+0
	8	1.31E+0	1.38E+0	1.67E+0	1.77E+0	1.29E+0	1.36E+0	1.64E+0	1.86E+0
	12	1.39E+0	1.47E+0	1.77E+0	1.87E+0	1.36E+0	1.44E+0	1.73E+0	1.96E+0
1	24	1.70E+0	1.80E+0	2.17E+0	2.30E+0	1.66E+0	1.76E+0	2.11E+0	2.39E+0
2		2.55E+0	2.70E+0	3.25E+0	3.44E+0	2.52E+0	2.66E+0	3.21E+0	3.59E+0
4		3.90E+0	4.12E+0	4.97E+0	5.25E+0	3.93E+0	4.16E+0	5.02E+0	5.53E+0
8		4.57E+0	4.84E+0	5.83E+0	6.16E+0	4.52E+0	4.78E+0	5.78E+0	6.33E+0
10		4.73E+0	5.00E+0	6.03E+0	6.37E+0	4.61E+0	4.88E+0	5.89E+0	6.46E+0
20		5.43E+0	5.74E+0	6.92E+0	7.31E+0	5.02E+0	5.30E+0	6.41E+0	7.02E+0
30		6.09E+0	6.43E+0	7.76E+0	8.19E+0	5.40E+0	5.71E+0	6.90E+0	7.55E+0

Table A-16. Ingested Activity of ⁶⁰Co vs. Count Rate on TPM-903B Portal Monitor (Bq/cpm)

Time post intake		Model/low-energy threshold			
		Standard width		Extra wide	
d	h	22.44 keV	32.34 keV	22.44 keV	32.34 keV
Infant					
	1	7.18E-1	7.54E-1	8.94E-1	9.41E-01
	2	7.24E-1	7.59E-1	9.04E-1	9.51E-1
	4	7.36E-1	7.71E-1	9.23E-1	9.69E-1
	8	7.83E-1	8.20E-1	9.82E-1	1.03E+0
	12	8.44E-1	8.84E-1	1.06E+0	1.11E+0
1	24	1.07E+0	1.12E+0	1.34E+0	1.41E+0
2		1.65E+0	1.72E+0	2.06E+0	2.16E+0
4		2.66E+0	2.78E+0	3.34E+0	3.50E+0
8		3.65E+0	3.81E+0	4.60E+0	4.81E+0
10		4.04E+0	4.21E+0	5.08E+0	5.31E+0
20		5.66E+0	5.90E+0	7.13E+0	7.45E+0
30		6.72E+0	7.00E+0	8.46E+0	8.85E+0
1-y-old					
	1	6.40E-1	6.75E-1	8.10E-1	8.56E-1
	2	6.47E-1	6.83E-1	8.18E-1	8.65E-1
	4	6.56E-1	6.92E-1	8.28E-1	8.75E-1
	8	6.86E-1	7.23E-1	8.64E-1	9.12E-1
	12	7.33E-1	7.72E-1	9.23E-1	9.73E-1
1	24	9.55E-1	1.01E+0	1.20E+0	1.27E+0
2		1.75E+0	1.84E+0	2.20E+0	2.32E+0
4		4.12E+0	4.33E+0	5.19E+0	5.46E+0
8		6.62E+0	6.94E+0	8.35E+0	8.76E+0
10		7.35E+0	7.70E+0	9.27E+0	9.72E+0
20		1.03E+1	1.08E+1	1.30E+1	1.37E+1
30		1.23E+1	1.28E+1	1.55E+1	1.62E+1
5-y-old					
	1	5.68E-1	6.01E-1	7.21E-1	7.65E-1
	2	5.72E-1	6.05E-1	7.26E-1	7.70E-1
	4	5.80E-1	6.13E-1	7.36E-1	7.79E-1
	8	6.05E-1	6.39E-1	7.67E-1	8.10E-1
	12	6.45E-1	6.81E-1	8.17E-1	8.63E-1
1	24	8.39E-1	8.87E-1	1.06E+0	1.12E+0
2		1.55E+0	1.63E+0	1.95E+0	2.06E+0
4		3.73E+0	3.92E+0	4.73E+0	4.98E+0
8		6.07E+0	6.36E+0	7.72E+0	8.11E+0
10		6.74E+0	7.06E+0	8.57E+0	9.00E+0
20		9.48E+0	9.94E+0	1.21E+1	1.27E+1
30		1.13E+1	1.18E+1	1.43E+1	1.50E+1

Table A-16 (continued)

Time post intake		Model/low-energy threshold			
		Standard width		Extra wide	
d	h	22.44 keV	32.34 keV	22.44 keV	32.34 keV
10-y-old					
	1	5.46E-1	5.80E-1	6.88E-1	7.32E-1
	2	5.47E-1	5.83E-1	6.90E-1	7.35E-1
	4	5.54E-1	5.90E-1	6.99E-1	7.44E-1
	8	5.79E-1	6.15E-1	7.29E-1	7.75E-1
	12	6.17E-1	6.56E-1	7.76E-1	8.25E-1
1	24	8.03E-1	8.54E-1	1.01E+0	1.07E+0
2		1.48E+0	1.58E+0	1.86E+0	1.98E+0
4		3.63E+0	3.83E+0	4.57E+0	4.83E+0
8		5.95E+0	6.26E+0	7.51E+0	7.91E+0
10		6.61E+0	6.94E+0	8.34E+0	8.79E+0
20		9.30E+0	9.77E+0	1.17E+1	1.24E+1
30		1.11E+1	1.16E+1	1.39E+1	1.47E+1
15-y-old					
	1	5.45E-1	5.83E-1	6.82E-1	7.30E-1
	2	5.47E-1	5.85E-1	6.84E-1	7.33E-1
	4	5.54E-1	5.92E-1	6.94E-1	7.43E-1
	8	5.77E-1	6.17E-1	7.24E-1	7.75E-1
	12	6.14E-1	6.57E-1	7.70E-1	8.25E-1
1	24	7.97E-1	8.53E-1	9.99E-1	1.07E+0
2		1.47E+0	1.57E+0	1.85E+0	1.97E+0
4		3.60E+0	3.82E+0	4.54E+0	4.83E+0
8		5.91E+0	6.25E+0	7.49E+0	7.93E+0
10		6.56E+0	6.94E+0	8.31E+0	8.81E+0
20		9.24E+0	9.77E+0	1.17E+1	1.24E+1
30		1.10E+1	1.16E+1	1.39E+1	1.47E+1
Adult male					
	1	5.67E-1	6.08E-1	7.10E-1	7.18E-1
	2	5.64E-1	6.04E-1	7.01E-1	7.10E-1
	4	5.67E-1	6.05E-1	7.02E-1	7.09E-1
	8	5.84E-1	6.23E-1	7.23E-1	7.27E-1
	12	6.17E-1	6.58E-1	7.62E-1	7.66E-1
1	24	8.03E-1	8.56E-1	9.90E-1	9.93E-1
2		1.66E+0	1.77E+0	2.05E+0	2.06E+0
4		6.74E+0	7.18E+0	8.37E+0	8.50E+0
8		1.79E+1	1.90E+1	2.24E+1	2.32E+1
10		2.02E+1	2.14E+1	2.53E+1	2.63E+1
20		2.85E+1	3.03E+1	3.58E+1	3.72E+1
30		3.39E+1	3.60E+1	4.26E+1	4.42E+1
Adult female					
	1	5.37E-1	5.74E-1	6.69E-1	7.61E-1
	2	5.30E-1	5.67E-1	6.62E-1	7.51E-1
	4	5.30E-1	5.66E-1	6.62E-1	7.51E-1
	8	5.45E-1	5.81E-1	6.81E-1	7.73E-1
	12	5.73E-1	6.11E-1	7.18E-1	8.15E-1
1	24	7.42E-1	7.89E-1	9.31E-1	1.06E+0
2		1.53E+0	1.63E+0	1.93E+0	2.19E+0
4		6.34E+0	6.74E+0	7.98E+0	8.92E+0
8		1.74E+1	1.84E+1	2.19E+1	2.38E+1
10		1.97E+1	2.09E+1	2.47E+1	2.68E+1
20		2.78E+1	2.95E+1	3.50E+1	3.79E+1
30		3.31E+1	3.51E+1	4.16E+1	4.51E+1

Table A-17. Intake of Type F ¹³¹I vs. Count Rate on TPM-903B Portal Monitor (Bq/cpm)

Time post intake		Pathway/model/low-energy threshold							
		Inhalation: Type F				Ingestion			
d	h	Standard width		Extra wide		Standard width		Extra wide	
		22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV
Infant									
	1	2.07E+0	2.28E+0	2.64E+0	2.92E+0	1.22E+0	1.35E+0	1.53E+0	1.94E+0
	2	2.19E+0	2.41E+0	2.79E+0	3.08E+0	1.28E+0	1.42E+0	1.61E+0	1.94E+0
	4	2.49E+0	2.74E+0	3.17E+0	3.50E+0	1.46E+0	1.62E+0	1.84E+0	1.95E+0
	8	3.15E+0	3.47E+0	4.01E+0	4.43E+0	1.92E+0	2.13E+0	2.42E+0	1.97E+0
	12	3.86E+0	4.25E+0	4.93E+0	5.44E+0	2.41E+0	2.67E+0	3.04E+0	1.98E+0
1	24	6.05E+0	6.66E+0	7.72E+0	8.52E+0	3.62E+0	4.01E+0	4.57E+0	2.02E+0
2		9.70E+0	1.07E+1	1.23E+1	1.36E+1	4.68E+0	5.18E+0	5.90E+0	2.11E+0
4		1.49E+1	1.65E+1	1.88E+1	2.08E+1	6.01E+0	6.65E+0	7.59E+0	2.30E+0
8		2.57E+1	2.85E+1	3.24E+1	3.60E+1	1.01E+1	1.11E+1	1.27E+1	2.74E+0
10		3.34E+1	3.70E+1	4.22E+1	4.68E+1	1.31E+1	1.45E+1	1.65E+1	2.99E+0
20		1.24E+2	1.37E+2	1.56E+2	1.74E+2	4.84E+1	5.36E+1	6.11E+1	4.64E+0
30		4.58E+2	5.07E+2	5.78E+2	6.41E+2	1.79E+2	1.98E+2	2.26E+2	7.22E+0
1-y-old									
	1	1.89E+0	2.10E+0	2.42E+0	2.68E+0	1.13E+0	1.27E+0	1.43E+0	1.79E+0
	2	2.00E+0	2.21E+0	2.55E+0	2.83E+0	1.18E+0	1.32E+0	1.50E+0	1.80E+0
	4	2.27E+0	2.51E+0	2.90E+0	3.22E+0	1.36E+0	1.51E+0	1.72E+0	1.81E+0
	8	2.89E+0	3.20E+0	3.69E+0	4.10E+0	1.80E+0	2.01E+0	2.27E+0	1.83E+0
	12	3.57E+0	3.95E+0	4.56E+0	5.06E+0	2.28E+0	2.54E+0	2.87E+0	1.85E+0
1	24	5.67E+0	6.29E+0	7.23E+0	8.03E+0	3.50E+0	3.92E+0	4.40E+0	1.89E+0
2		9.17E+0	1.02E+1	1.16E+1	1.29E+1	4.55E+0	5.09E+0	5.72E+0	1.99E+0
4		1.38E+1	1.55E+1	1.74E+1	1.95E+1	5.72E+0	6.41E+0	7.19E+0	2.21E+0
8		2.28E+1	2.55E+1	2.86E+1	3.21E+1	9.09E+0	1.02E+1	1.14E+1	2.74E+0
10		2.89E+1	3.24E+1	3.64E+1	4.07E+1	1.15E+1	1.29E+1	1.45E+1	3.05E+0
20		9.60E+1	1.08E+2	1.21E+2	1.35E+2	3.83E+1	4.29E+1	4.82E+1	5.20E+0
30		3.19E+2	3.57E+2	4.01E+2	4.49E+2	1.27E+2	1.43E+2	1.60E+2	8.86E+0
5-y-old									
	1	2.06E+0	2.29E+0	2.63E+0	2.93E+0	1.05E+0	1.18E+0	1.32E+0	1.66E+0
	2	2.14E+0	2.38E+0	2.73E+0	3.05E+0	1.08E+0	1.22E+0	1.36E+0	1.67E+0
	4	2.38E+0	2.65E+0	3.04E+0	3.39E+0	1.20E+0	1.35E+0	1.51E+0	1.68E+0
	8	3.02E+0	3.36E+0	3.86E+0	4.30E+0	1.56E+0	1.75E+0	1.95E+0	1.70E+0
	12	3.78E+0	4.21E+0	4.82E+0	5.38E+0	2.00E+0	2.25E+0	2.51E+0	1.71E+0
1	24	6.21E+0	6.91E+0	7.88E+0	8.78E+0	3.25E+0	3.66E+0	4.05E+0	1.75E+0
2		1.01E+1	1.13E+1	1.27E+1	1.42E+1	4.35E+0	4.90E+0	5.40E+0	1.83E+0
4		1.48E+1	1.66E+1	1.84E+1	2.07E+1	5.38E+0	6.06E+0	6.68E+0	2.00E+0
8		2.30E+1	2.59E+1	2.86E+1	3.22E+1	8.12E+0	9.14E+0	1.01E+1	2.38E+0
10		2.84E+1	3.20E+1	3.54E+1	3.98E+1	1.00E+1	1.13E+1	1.25E+1	2.59E+0
20		8.36E+1	9.41E+1	1.04E+2	1.17E+2	2.95E+1	3.32E+1	3.67E+1	3.78E+0
30		2.47E+2	2.78E+2	3.07E+2	3.45E+2	8.71E+1	9.80E+1	1.08E+2	5.26E+0
10-y-old									
	1	2.05E+0	2.28E+0	2.60E+0	2.91E+0	1.04E+0	1.18E+0	1.30E+0	1.62E+0
	2	2.13E+0	2.37E+0	2.71E+0	3.02E+0	1.08E+0	1.22E+0	1.35E+0	1.64E+0
	4	2.36E+0	2.64E+0	3.01E+0	3.36E+0	1.19E+0	1.34E+0	1.49E+0	1.65E+0
	8	3.00E+0	3.35E+0	3.83E+0	4.27E+0	1.55E+0	1.74E+0	1.94E+0	1.67E+0
	12	3.77E+0	4.20E+0	4.80E+0	5.36E+0	2.00E+0	2.25E+0	2.50E+0	1.68E+0
1	24	6.24E+0	6.95E+0	7.92E+0	8.83E+0	3.29E+0	3.70E+0	4.09E+0	1.72E+0
2		1.02E+1	1.14E+1	1.28E+1	1.43E+1	4.42E+0	4.97E+0	5.49E+0	1.79E+0
4		1.47E+1	1.66E+1	1.83E+1	2.06E+1	5.39E+0	6.06E+0	6.69E+0	1.94E+0
8		2.18E+1	2.45E+1	2.70E+1	3.04E+1	7.72E+0	8.69E+0	9.60E+0	2.23E+0
10		2.61E+1	2.94E+1	3.25E+1	3.66E+1	9.27E+0	1.04E+1	1.15E+1	2.37E+0
20		6.63E+1	7.46E+1	8.24E+1	9.28E+1	2.35E+1	2.65E+1	2.92E+1	3.00E+0
30		1.70E+2	1.92E+2	2.12E+2	2.38E+2	6.05E+1	6.80E+1	7.52E+1	3.57E+0

Table A-17 (continued)

Time post intake		Pathway/model/low-energy threshold							
		Inhalation: Type F				Ingestion			
d	h	Standard width		Extra wide		Standard width		Extra wide	
		22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV
15-y-old									
	1	2.47E+0	2.78E+0	3.15E+0	3.54E+0	1.10E+0	1.25E+0	1.37E+0	1.68E+0
	2	2.56E+0	2.88E+0	3.27E+0	3.68E+0	1.13E+0	1.28E+0	1.41E+0	1.70E+0
	4	2.85E+0	3.20E+0	3.64E+0	4.10E+0	1.25E+0	1.41E+0	1.56E+0	1.71E+0
	8	3.65E+0	4.09E+0	4.66E+0	5.24E+0	1.62E+0	1.84E+0	2.04E+0	1.72E+0
	12	4.61E+0	5.17E+0	5.90E+0	6.63E+0	2.11E+0	2.39E+0	2.65E+0	1.73E+0
1	24	7.65E+0	8.58E+0	9.81E+0	1.10E+1	3.50E+0	3.97E+0	4.41E+0	1.76E+0
2		1.22E+1	1.38E+1	1.56E+1	1.75E+1	4.74E+0	5.37E+0	5.98E+0	1.82E+0
4		1.72E+1	1.95E+1	2.17E+1	2.46E+1	5.78E+0	6.54E+0	7.28E+0	1.93E+0
8		2.52E+1	2.85E+1	3.18E+1	3.59E+1	8.25E+0	9.33E+0	1.04E+1	2.07E+0
10		3.02E+1	3.42E+1	3.81E+1	4.30E+1	9.87E+0	1.12E+1	1.24E+1	2.12E+0
20		7.55E+1	8.55E+1	9.52E+1	1.08E+2	2.47E+1	2.79E+1	3.11E+1	2.30E+0
30		1.91E+2	2.17E+2	2.41E+2	2.73E+2	6.26E+1	7.08E+1	7.89E+1	2.48E+0
Adult male									
	1	2.54E+0	2.85E+0	3.25E+0	3.66E+0	1.17E+0	1.33E+0	1.47E+0	1.66E+0
	2	2.62E+0	2.95E+0	3.35E+0	3.78E+0	1.19E+0	1.35E+0	1.49E+0	1.65E+0
	4	2.90E+0	3.26E+0	3.70E+0	4.17E+0	1.30E+0	1.47E+0	1.63E+0	1.66E+0
	8	3.67E+0	4.12E+0	4.70E+0	5.29E+0	1.67E+0	1.89E+0	2.09E+0	1.67E+0
	12	4.59E+0	5.14E+0	5.88E+0	6.62E+0	2.13E+0	2.40E+0	2.67E+0	1.69E+0
1	24	7.38E+0	8.27E+0	9.50E+0	1.07E+1	3.39E+0	3.82E+0	4.28E+0	1.72E+0
2		1.14E+1	1.27E+1	1.45E+1	1.63E+1	4.47E+0	5.03E+0	5.66E+0	1.78E+0
4		1.57E+1	1.76E+1	1.99E+1	2.24E+1	5.43E+0	6.11E+0	6.89E+0	1.87E+0
8		2.28E+1	2.56E+1	2.89E+1	3.25E+1	7.73E+0	8.70E+0	9.80E+0	1.97E+0
10		2.72E+1	3.06E+1	3.45E+1	3.88E+1	9.23E+0	1.04E+1	1.17E+1	2.01E+0
20		6.67E+1	7.50E+1	8.45E+1	9.52E+1	2.26E+1	2.54E+1	2.87E+1	2.15E+0
30		1.65E+2	1.86E+2	2.10E+2	2.36E+2	5.61E+1	6.32E+1	7.12E+1	2.29E+0
Adult female									
	1	2.30E+0	2.60E+0	2.96E+0	3.33E+0	1.09E+0	1.24E+0	1.36E+0	1.79E+0
	2	2.38E+0	2.68E+0	3.05E+0	3.43E+0	1.10E+0	1.25E+0	1.38E+0	1.79E+0
	4	2.62E+0	2.96E+0	3.37E+0	3.79E+0	1.19E+0	1.35E+0	1.50E+0	1.78E+0
	8	3.33E+0	3.75E+0	4.28E+0	4.80E+0	1.53E+0	1.73E+0	1.93E+0	1.77E+0
	12	4.17E+0	4.68E+0	5.37E+0	6.02E+0	1.96E+0	2.22E+0	2.47E+0	1.76E+0
1	24	6.76E+0	7.59E+0	8.70E+0	9.76E+0	3.15E+0	3.56E+0	3.98E+0	1.77E+0
2		1.05E+1	1.18E+1	1.35E+1	1.51E+1	4.19E+0	4.72E+0	5.29E+0	1.83E+0
4		1.47E+1	1.65E+1	1.86E+1	2.09E+1	5.10E+0	5.74E+0	6.45E+0	1.91E+0
8		2.14E+1	2.41E+1	2.71E+1	3.05E+1	7.27E+0	8.19E+0	9.18E+0	2.02E+0
10		2.56E+1	2.88E+1	3.23E+1	3.64E+1	8.68E+0	9.78E+0	1.10E+1	2.05E+0
20		6.29E+1	7.09E+1	7.94E+1	8.94E+1	2.13E+1	2.40E+1	2.69E+1	2.20E+0
30		1.56E+2	1.76E+2	1.97E+2	2.22E+2	5.30E+1	5.98E+1	6.69E+1	2.34E+0

Table A-18. Intake of ¹³⁷Cs vs. Count Rate on TPM-903B Portal Monitor (Bq/cpm)

Time post intake		Pathway/model/low-energy threshold							
		Inhalation: Type F				Ingestion			
d	h	Standard width		Extra wide		Standard width		Extra wide	
		22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV
Infant									
	1	2.43E+0	2.57E+0	3.09E+0	3.28E+0	1.43E+0	1.52E+0	1.80E+0	1.94E+0
	2	2.46E+0	2.61E+0	3.14E+0	3.33E+0	1.43E+0	1.52E+0	1.81E+0	1.94E+0
	4	2.54E+0	2.69E+0	3.23E+0	3.43E+0	1.44E+0	1.53E+0	1.81E+0	1.95E+0
	8	2.68E+0	2.84E+0	3.40E+0	3.62E+0	1.45E+0	1.54E+0	1.83E+0	1.97E+0
	12	2.82E+0	2.99E+0	3.57E+0	3.80E+0	1.46E+0	1.56E+0	1.84E+0	1.98E+0
1	24	3.18E+0	3.38E+0	4.02E+0	4.28E+0	1.49E+0	1.59E+0	1.88E+0	2.02E+0
2		3.70E+0	3.94E+0	4.66E+0	4.98E+0	1.56E+0	1.66E+0	1.96E+0	2.11E+0
4		4.30E+0	4.58E+0	5.40E+0	5.77E+0	1.70E+0	1.81E+0	2.13E+0	2.30E+0
8		5.17E+0	5.51E+0	6.50E+0	6.94E+0	2.02E+0	2.15E+0	2.54E+0	2.74E+0
10		5.65E+0	6.01E+0	7.09E+0	7.58E+0	2.21E+0	2.35E+0	2.77E+0	2.99E+0
20		8.76E+0	9.33E+0	1.10E+1	1.18E+1	3.42E+0	3.65E+0	4.30E+0	4.64E+0
30		1.37E+1	1.45E+1	1.71E+1	1.83E+1	5.33E+0	5.68E+0	6.70E+0	7.22E+0
1-y-old									
	1	2.20E+0	2.34E+0	2.81E+0	3.00E+0	1.31E+0	1.40E+0	1.66E+0	1.79E+0
	2	2.24E+0	2.38E+0	2.86E+0	3.04E+0	1.32E+0	1.41E+0	1.67E+0	1.80E+0
	4	2.31E+0	2.45E+0	2.94E+0	3.14E+0	1.33E+0	1.42E+0	1.68E+0	1.81E+0
	8	2.44E+0	2.59E+0	3.11E+0	3.31E+0	1.34E+0	1.43E+0	1.69E+0	1.83E+0
	12	2.57E+0	2.73E+0	3.27E+0	3.48E+0	1.35E+0	1.45E+0	1.71E+0	1.85E+0
1	24	2.90E+0	3.09E+0	3.68E+0	3.93E+0	1.39E+0	1.49E+0	1.75E+0	1.89E+0
2		3.40E+0	3.63E+0	4.31E+0	4.60E+0	1.46E+0	1.56E+0	1.85E+0	1.99E+0
4		4.03E+0	4.30E+0	5.08E+0	5.44E+0	1.63E+0	1.74E+0	2.05E+0	2.21E+0
8		5.04E+0	5.39E+0	6.36E+0	6.80E+0	2.01E+0	2.15E+0	2.54E+0	2.74E+0
10		5.61E+0	5.99E+0	7.07E+0	7.57E+0	2.24E+0	2.39E+0	2.82E+0	3.05E+0
20		9.56E+0	1.02E+1	1.21E+1	1.29E+1	3.82E+0	4.08E+0	4.81E+0	5.20E+0
30		1.63E+1	1.74E+1	2.06E+1	2.20E+1	6.50E+0	6.95E+0	8.20E+0	8.86E+0
5-y-old									
	1	2.40E+0	2.56E+0	3.05E+0	3.26E+0	1.21E+0	1.31E+0	1.53E+0	1.66E+0
	2	2.44E+0	2.60E+0	3.10E+0	3.31E+0	1.23E+0	1.32E+0	1.54E+0	1.67E+0
	4	2.51E+0	2.67E+0	3.19E+0	3.41E+0	1.24E+0	1.33E+0	1.55E+0	1.68E+0
	8	2.64E+0	2.81E+0	3.36E+0	3.58E+0	1.25E+0	1.34E+0	1.57E+0	1.70E+0
	12	2.76E+0	2.95E+0	3.51E+0	3.75E+0	1.26E+0	1.35E+0	1.58E+0	1.71E+0
1	24	3.09E+0	3.30E+0	3.92E+0	4.18E+0	1.28E+0	1.37E+0	1.62E+0	1.75E+0
2		3.56E+0	3.81E+0	4.50E+0	4.82E+0	1.34E+0	1.44E+0	1.69E+0	1.83E+0
4		4.12E+0	4.41E+0	5.20E+0	5.57E+0	1.47E+0	1.57E+0	1.85E+0	2.00E+0
8		4.95E+0	5.30E+0	6.24E+0	6.69E+0	1.75E+0	1.87E+0	2.20E+0	2.38E+0
10		5.38E+0	5.76E+0	6.79E+0	7.27E+0	1.90E+0	2.03E+0	2.39E+0	2.59E+0
20		7.87E+0	8.42E+0	9.92E+0	1.06E+1	2.78E+0	2.97E+0	3.50E+0	3.78E+0
30		1.09E+1	1.17E+1	1.38E+1	1.48E+1	3.86E+0	4.13E+0	4.87E+0	5.26E+0
10-y-old									
	1	2.35E+0	2.52E+0	2.99E+0	3.21E+0	1.18E+0	1.28E+0	1.48E+0	1.62E+0
	2	2.39E+0	2.56E+0	3.05E+0	3.26E+0	1.20E+0	1.29E+0	1.50E+0	1.64E+0
	4	2.46E+0	2.64E+0	3.13E+0	3.36E+0	1.21E+0	1.30E+0	1.52E+0	1.65E+0
	8	2.59E+0	2.77E+0	3.30E+0	3.53E+0	1.22E+0	1.32E+0	1.53E+0	1.67E+0
	12	2.71E+0	2.90E+0	3.45E+0	3.69E+0	1.23E+0	1.33E+0	1.55E+0	1.68E+0
1	24	3.03E+0	3.25E+0	3.83E+0	4.11E+0	1.26E+0	1.36E+0	1.58E+0	1.72E+0
2		3.48E+0	3.74E+0	4.39E+0	4.71E+0	1.32E+0	1.41E+0	1.65E+0	1.79E+0
4		3.98E+0	4.28E+0	5.01E+0	5.38E+0	1.42E+0	1.53E+0	1.79E+0	1.94E+0
8		4.62E+0	4.97E+0	5.81E+0	6.24E+0	1.64E+0	1.76E+0	2.06E+0	2.23E+0
10		4.91E+0	5.28E+0	6.17E+0	6.63E+0	1.74E+0	1.87E+0	2.19E+0	2.37E+0
20		6.21E+0	6.68E+0	7.81E+0	8.38E+0	2.20E+0	2.37E+0	2.77E+0	3.00E+0
30		7.39E+0	7.94E+0	9.29E+0	9.98E+0	2.62E+0	2.82E+0	3.29E+0	3.57E+0

Table A-18 (continued)

Time post intake		Pathway/model/low-energy threshold							
		Inhalation: Type F				Ingestion			
d	h	Standard width		Extra wide		Standard width		Extra wide	
		22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV
15-y-old									
	1	2.80E+0	3.02E+0	3.57E+0	3.85E+0	1.22E+0	1.33E+0	1.53E+0	1.68E+0
	2	2.84E+0	3.06E+0	3.62E+0	3.90E+0	1.24E+0	1.34E+0	1.55E+0	1.70E+0
	4	2.90E+0	3.13E+0	3.70E+0	3.99E+0	1.24E+0	1.35E+0	1.56E+0	1.71E+0
	8	3.02E+0	3.25E+0	3.85E+0	4.15E+0	1.25E+0	1.35E+0	1.57E+0	1.72E+0
	12	3.13E+0	3.38E+0	3.99E+0	4.31E+0	1.25E+0	1.36E+0	1.58E+0	1.73E+0
1	24	3.43E+0	3.70E+0	4.36E+0	4.71E+0	1.27E+0	1.38E+0	1.61E+0	1.76E+0
2		3.84E+0	4.15E+0	4.87E+0	5.27E+0	1.32E+0	1.43E+0	1.67E+0	1.82E+0
4		4.25E+0	4.60E+0	5.37E+0	5.82E+0	1.40E+0	1.51E+0	1.77E+0	1.93E+0
8		4.58E+0	4.96E+0	5.79E+0	6.28E+0	1.50E+0	1.62E+0	1.89E+0	2.07E+0
10		4.69E+0	5.08E+0	5.93E+0	6.42E+0	1.53E+0	1.66E+0	1.94E+0	2.12E+0
20		5.10E+0	5.52E+0	6.45E+0	6.98E+0	1.67E+0	1.80E+0	2.11E+0	2.30E+0
30		5.50E+0	5.95E+0	6.95E+0	7.53E+0	1.80E+0	1.95E+0	2.27E+0	2.48E+0
Adult male									
	1	2.86E+0	3.08E+0	3.66E+0	3.93E+0	1.30E+0	1.41E+0	1.64E+0	1.66E+0
	2	2.88E+0	3.10E+0	3.69E+0	3.97E+0	1.30E+0	1.40E+0	1.64E+0	1.65E+0
	4	2.94E+0	3.16E+0	3.75E+0	4.03E+0	1.29E+0	1.40E+0	1.63E+0	1.66E+0
	8	3.04E+0	3.27E+0	3.86E+0	4.15E+0	1.29E+0	1.39E+0	1.62E+0	1.67E+0
	12	3.14E+0	3.38E+0	3.97E+0	4.28E+0	1.29E+0	1.39E+0	1.61E+0	1.69E+0
1	24	3.40E+0	3.67E+0	4.28E+0	4.62E+0	1.30E+0	1.41E+0	1.63E+0	1.72E+0
2		3.76E+0	4.08E+0	4.72E+0	5.10E+0	1.34E+0	1.45E+0	1.67E+0	1.78E+0
4		4.11E+0	4.45E+0	5.13E+0	5.55E+0	1.40E+0	1.52E+0	1.75E+0	1.87E+0
8		4.36E+0	4.73E+0	5.45E+0	5.89E+0	1.48E+0	1.60E+0	1.85E+0	1.97E+0
10		4.44E+0	4.81E+0	5.55E+0	6.00E+0	1.51E+0	1.63E+0	1.88E+0	2.01E+0
20		4.75E+0	5.15E+0	5.94E+0	6.43E+0	1.61E+0	1.75E+0	2.01E+0	2.15E+0
30		5.07E+0	5.49E+0	6.33E+0	6.85E+0	1.72E+0	1.86E+0	2.15E+0	2.29E+0
Adult female									
	1	2.62E+0	2.83E+0	3.33E+0	3.60E+0	1.21E+0	1.32E+0	1.51E+0	1.79E+0
	2	2.65E+0	2.86E+0	3.37E+0	3.64E+0	1.21E+0	1.31E+0	1.50E+0	1.79E+0
	4	2.72E+0	2.94E+0	3.45E+0	3.73E+0	1.21E+0	1.31E+0	1.51E+0	1.78E+0
	8	2.85E+0	3.08E+0	3.61E+0	3.90E+0	1.23E+0	1.33E+0	1.53E+0	1.77E+0
	12	2.98E+0	3.21E+0	3.76E+0	4.06E+0	1.24E+0	1.34E+0	1.55E+0	1.76E+0
1	24	3.28E+0	3.54E+0	4.13E+0	4.45E+0	1.27E+0	1.37E+0	1.58E+0	1.77E+0
2		3.68E+0	3.97E+0	4.60E+0	4.96E+0	1.32E+0	1.42E+0	1.64E+0	1.83E+0
4		4.03E+0	4.36E+0	5.02E+0	5.42E+0	1.38E+0	1.49E+0	1.71E+0	1.91E+0
8		4.29E+0	4.63E+0	5.33E+0	5.76E+0	1.45E+0	1.57E+0	1.81E+0	2.02E+0
10		4.36E+0	4.71E+0	5.43E+0	5.86E+0	1.48E+0	1.60E+0	1.84E+0	2.05E+0
20		4.67E+0	5.05E+0	5.81E+0	6.27E+0	1.59E+0	1.71E+0	1.97E+0	2.20E+0
30		4.98E+0	5.38E+0	6.20E+0	6.69E+0	1.69E+0	1.83E+0	2.10E+0	2.34E+0

Table A-19. Inhaled Activity of ¹⁹²Ir vs. Count Rate on TPM-903B Portal Monitor (Bq/cpm)

Time post intake		Pathway/model/low-energy threshold							
		Inhalation: Type <i>F</i>				Inhalation: Type <i>M</i>			
d	h	Standard width		Extra wide		Standard width		Extra wide	
		22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV
Infant									
	1	9.32E-1	1.04E+0	1.18E+0	1.32E+0	9.21E-1	1.03E+0	1.17E+0	1.30E+0
	2	9.53E-1	1.06E+0	1.21E+0	1.35E+0	9.42E-1	1.05E+0	1.19E+0	1.34E+0
	4	9.93E-1	1.11E+0	1.26E+0	1.40E+0	9.76E-1	1.09E+0	1.24E+0	1.38E+0
	8	1.07E+0	1.19E+0	1.35E+0	1.51E+0	1.04E+0	1.16E+0	1.32E+0	1.48E+0
	12	1.15E+0	1.28E+0	1.46E+0	1.63E+0	1.12E+0	1.25E+0	1.42E+0	1.59E+0
1	24	1.42E+0	1.59E+0	1.79E+0	2.01E+0	1.44E+0	1.61E+0	1.82E+0	2.04E+0
2		2.01E+0	2.25E+0	2.54E+0	2.84E+0	2.38E+0	2.65E+0	3.00E+0	3.36E+0
4		2.79E+0	3.12E+0	3.51E+0	3.93E+0	4.18E+0	4.65E+0	5.27E+0	5.88E+0
8		3.26E+0	3.64E+0	4.10E+0	4.59E+0	5.17E+0	5.75E+0	6.53E+0	7.27E+0
10		3.41E+0	3.81E+0	4.29E+0	4.80E+0	5.40E+0	6.00E+0	6.81E+0	7.59E+0
20		4.13E+0	4.61E+0	5.20E+0	5.81E+0	6.54E+0	7.27E+0	8.25E+0	9.19E+0
30		4.83E+0	5.39E+0	6.08E+0	6.80E+0	7.80E+0	8.67E+0	9.84E+0	1.10E+1
1-y-old									
	1	8.54E-1	9.55E-1	1.09E+0	1.22E+0	8.42E-1	9.41E-1	1.07E+0	1.20E+0
	2	8.74E-1	9.77E-1	1.11E+0	1.25E+0	8.61E-1	9.64E-1	1.10E+0	1.23E+0
	4	9.10E-1	1.02E+0	1.16E+0	1.30E+0	8.91E-1	9.99E-1	1.14E+0	1.28E+0
	8	9.80E-1	1.10E+0	1.25E+0	1.40E+0	9.52E-1	1.07E+0	1.21E+0	1.36E+0
	12	1.05E+0	1.18E+0	1.34E+0	1.51E+0	1.02E+0	1.15E+0	1.30E+0	1.46E+0
1	24	1.30E+0	1.46E+0	1.65E+0	1.86E+0	1.31E+0	1.47E+0	1.66E+0	1.87E+0
2		1.85E+0	2.07E+0	2.33E+0	2.62E+0	2.14E+0	2.40E+0	2.72E+0	3.05E+0
4		2.56E+0	2.87E+0	3.22E+0	3.62E+0	3.70E+0	4.13E+0	4.68E+0	5.24E+0
8		2.99E+0	3.35E+0	3.76E+0	4.23E+0	4.54E+0	5.06E+0	5.74E+0	6.42E+0
10		3.13E+0	3.51E+0	3.94E+0	4.43E+0	4.74E+0	5.28E+0	5.99E+0	6.69E+0
20		3.79E+0	4.25E+0	4.77E+0	5.36E+0	5.72E+0	6.37E+0	7.23E+0	8.07E+0
30		4.43E+0	4.97E+0	5.57E+0	6.26E+0	6.80E+0	7.58E+0	8.60E+0	9.60E+0
5-y-old									
	1	9.31E-1	1.05E+0	1.18E+0	1.33E+0	9.12E-1	1.02E+0	1.16E+0	1.30E+0
	2	9.48E-1	1.07E+0	1.21E+0	1.36E+0	9.29E-1	1.04E+0	1.18E+0	1.33E+0
	4	9.82E-1	1.11E+0	1.25E+0	1.41E+0	9.58E-1	1.08E+0	1.22E+0	1.37E+0
	8	1.05E+0	1.19E+0	1.34E+0	1.51E+0	1.02E+0	1.15E+0	1.29E+0	1.45E+0
	12	1.13E+0	1.27E+0	1.43E+0	1.61E+0	1.09E+0	1.22E+0	1.37E+0	1.55E+0
1	24	1.38E+0	1.56E+0	1.75E+0	1.97E+0	1.37E+0	1.54E+0	1.72E+0	1.95E+0
2		1.92E+0	2.17E+0	2.42E+0	2.74E+0	2.16E+0	2.43E+0	2.71E+0	3.06E+0
4		2.61E+0	2.95E+0	3.29E+0	3.72E+0	3.53E+0	3.96E+0	4.41E+0	4.96E+0
8		3.04E+0	3.43E+0	3.82E+0	4.33E+0	4.26E+0	4.78E+0	5.32E+0	5.98E+0
10		3.18E+0	3.59E+0	4.00E+0	4.53E+0	4.44E+0	4.98E+0	5.55E+0	6.23E+0
20		3.85E+0	4.35E+0	4.84E+0	5.48E+0	5.36E+0	6.01E+0	6.70E+0	7.53E+0
30		4.50E+0	5.09E+0	5.67E+0	6.42E+0	6.38E+0	7.15E+0	7.97E+0	8.96E+0
10-y-old									
	1	9.27E-1	1.05E+0	1.18E+0	1.33E+0	9.07E-1	1.02E+0	1.15E+0	1.30E+0
	2	9.44E-1	1.07E+0	1.20E+0	1.35E+0	9.24E-1	1.04E+0	1.17E+0	1.32E+0
	4	9.78E-1	1.10E+0	1.24E+0	1.40E+0	9.52E-1	1.08E+0	1.21E+0	1.36E+0
	8	1.05E+0	1.19E+0	1.33E+0	1.50E+0	1.01E+0	1.14E+0	1.28E+0	1.44E+0
	12	1.12E+0	1.27E+0	1.42E+0	1.61E+0	1.08E+0	1.22E+0	1.36E+0	1.54E+0
1	24	1.37E+0	1.56E+0	1.73E+0	1.96E+0	1.36E+0	1.54E+0	1.71E+0	1.94E+0
2		1.92E+0	2.18E+0	2.41E+0	2.73E+0	2.17E+0	2.45E+0	2.72E+0	3.08E+0
4		2.63E+0	2.98E+0	3.28E+0	3.73E+0	3.62E+0	4.08E+0	4.52E+0	5.10E+0
8		3.06E+0	3.48E+0	3.82E+0	4.34E+0	4.40E+0	4.95E+0	5.49E+0	6.18E+0
10		3.21E+0	3.64E+0	4.00E+0	4.55E+0	4.59E+0	5.16E+0	5.73E+0	6.44E+0
20		3.88E+0	4.41E+0	4.85E+0	5.51E+0	5.54E+0	6.24E+0	6.91E+0	7.78E+0
30		4.54E+0	5.15E+0	5.67E+0	6.44E+0	6.60E+0	7.42E+0	8.23E+0	9.26E+0

Table A-19 (continued)

Time post intake		Pathway/model/low-energy threshold							
		Inhalation: Type <i>F</i>				Inhalation: Type <i>M</i>			
d	h	Standard width		Extra wide		Standard width		Extra wide	
		22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV
15-y-old									
	1	1.12E+0	1.27E+0	1.43E+0	1.62E+0	1.11E+0	1.25E+0	1.40E+0	1.59E+0
	2	1.14E+0	1.29E+0	1.45E+0	1.64E+0	1.12E+0	1.28E+0	1.42E+0	1.61E+0
	4	1.18E+0	1.34E+0	1.49E+0	1.70E+0	1.15E+0	1.31E+0	1.45E+0	1.65E+0
	8	1.25E+0	1.42E+0	1.58E+0	1.81E+0	1.21E+0	1.38E+0	1.53E+0	1.74E+0
	12	1.33E+0	1.52E+0	1.68E+0	1.92E+0	1.29E+0	1.47E+0	1.62E+0	1.85E+0
1	24	1.59E+0	1.82E+0	2.01E+0	2.29E+0	1.58E+0	1.80E+0	1.98E+0	2.26E+0
2		2.13E+0	2.43E+0	2.68E+0	3.06E+0	2.35E+0	2.68E+0	2.94E+0	3.36E+0
4		2.79E+0	3.18E+0	3.50E+0	4.01E+0	3.58E+0	4.07E+0	4.47E+0	5.09E+0
8		3.21E+0	3.67E+0	4.04E+0	4.62E+0	4.23E+0	4.81E+0	5.29E+0	6.01E+0
10		3.36E+0	3.84E+0	4.23E+0	4.84E+0	4.41E+0	5.01E+0	5.51E+0	6.26E+0
20		4.07E+0	4.65E+0	5.12E+0	5.85E+0	5.33E+0	6.05E+0	6.66E+0	7.56E+0
30		4.77E+0	5.44E+0	5.99E+0	6.85E+0	6.34E+0	7.20E+0	7.93E+0	9.01E+0
Adult male									
	1	1.16E+0	1.32E+0	1.48E+0	1.68E+0	1.14E+0	1.30E+0	1.45E+0	1.51E+0
	2	1.18E+0	1.34E+0	1.49E+0	1.70E+0	1.15E+0	1.31E+0	1.46E+0	1.52E+0
	4	1.20E+0	1.37E+0	1.53E+0	1.74E+0	1.17E+0	1.34E+0	1.49E+0	1.54E+0
	8	1.27E+0	1.45E+0	1.61E+0	1.84E+0	1.22E+0	1.40E+0	1.55E+0	1.61E+0
	12	1.34E+0	1.53E+0	1.70E+0	1.95E+0	1.29E+0	1.47E+0	1.64E+0	1.70E+0
1	24	1.59E+0	1.82E+0	2.01E+0	2.30E+0	1.57E+0	1.80E+0	1.99E+0	2.08E+0
2		2.12E+0	2.43E+0	2.67E+0	3.06E+0	2.33E+0	2.68E+0	2.96E+0	3.12E+0
4		2.77E+0	3.19E+0	3.49E+0	4.01E+0	3.55E+0	4.08E+0	4.51E+0	4.79E+0
8		3.20E+0	3.68E+0	4.03E+0	4.63E+0	4.20E+0	4.82E+0	5.33E+0	5.68E+0
10		3.35E+0	3.86E+0	4.22E+0	4.84E+0	4.37E+0	5.02E+0	5.55E+0	5.92E+0
20		4.06E+0	4.67E+0	5.11E+0	5.86E+0	5.27E+0	6.05E+0	6.68E+0	7.13E+0
30		4.75E+0	5.46E+0	5.97E+0	6.86E+0	6.26E+0	7.18E+0	7.94E+0	8.47E+0
Adult female									
	1	1.04E+0	1.19E+0	1.33E+0	1.51E+0	1.03E+0	1.18E+0	1.32E+0	1.66E+0
	2	1.06E+0	1.20E+0	1.34E+0	1.53E+0	1.04E+0	1.18E+0	1.33E+0	1.67E+0
	4	1.09E+0	1.24E+0	1.38E+0	1.57E+0	1.05E+0	1.20E+0	1.35E+0	1.70E+0
	8	1.16E+0	1.31E+0	1.47E+0	1.67E+0	1.10E+0	1.26E+0	1.41E+0	1.78E+0
	12	1.23E+0	1.40E+0	1.56E+0	1.78E+0	1.17E+0	1.33E+0	1.49E+0	1.88E+0
1	24	1.48E+0	1.69E+0	1.87E+0	2.13E+0	1.43E+0	1.63E+0	1.82E+0	2.28E+0
2		2.01E+0	2.29E+0	2.52E+0	2.88E+0	2.15E+0	2.45E+0	2.73E+0	3.39E+0
4		2.67E+0	3.05E+0	3.33E+0	3.81E+0	3.32E+0	3.77E+0	4.20E+0	5.16E+0
8		3.10E+0	3.53E+0	3.85E+0	4.41E+0	3.94E+0	4.47E+0	4.98E+0	6.10E+0
10		3.24E+0	3.70E+0	4.03E+0	4.61E+0	4.10E+0	4.66E+0	5.19E+0	6.36E+0
20		3.93E+0	4.48E+0	4.88E+0	5.59E+0	4.95E+0	5.62E+0	6.25E+0	7.65E+0
30		4.60E+0	5.24E+0	5.71E+0	6.54E+0	5.88E+0	6.69E+0	7.43E+0	9.09E+0

Table A-20. Intake of ¹⁹²Ir vs. Count Rate on TPM-903B Portal Monitor (Bq/cpm)

Time post intake		Pathway/model/low-energy threshold							
		Inhalation: Type S				Ingestion			
d	h	Standard width		Extra wide		Standard width		Extra wide	
		22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV
Infant									
	1	9.19E-1	1.02E+0	1.17E+0	1.30E+0	5.64E-1	6.36E-1	7.05E-1	7.96E-1
	2	9.41E-1	1.05E+0	1.19E+0	1.33E+0	5.73E-1	6.46E-1	7.15E-1	8.09E-1
	4	9.74E-1	1.09E+0	1.23E+0	1.38E+0	5.79E-1	6.54E-1	7.24E-1	8.20E-1
	8	1.04E+0	1.16E+0	1.32E+0	1.47E+0	5.97E-1	6.73E-1	7.45E-1	8.44E-1
	12	1.12E+0	1.25E+0	1.42E+0	1.59E+0	6.30E-1	7.11E-1	7.87E-1	8.91E-1
1	24	1.44E+0	1.61E+0	1.82E+0	2.04E+0	8.26E-1	9.33E-1	1.03E+0	1.17E+0
2		2.42E+0	2.71E+0	3.06E+0	3.42E+0	1.79E+0	2.02E+0	2.23E+0	2.53E+0
4		4.40E+0	4.90E+0	5.56E+0	6.20E+0	9.46E+0	1.07E+1	1.18E+1	1.33E+1
8		5.47E+0	6.08E+0	6.91E+0	7.70E+0	3.92E+1	4.38E+1	4.93E+1	5.51E+1
10		5.69E+0	6.32E+0	7.19E+0	8.01E+0	4.31E+1	4.81E+1	5.42E+1	6.06E+1
20		6.80E+0	7.55E+0	8.59E+0	9.56E+0	5.26E+1	5.87E+1	6.62E+1	7.40E+1
30		8.02E+0	8.90E+0	1.01E+1	1.13E+1	6.16E+1	6.87E+1	7.75E+1	8.66E+1
1-y-old									
	1	8.40E-1	9.39E-1	1.07E+0	1.20E+0	5.25E-1	5.96E-1	6.62E-1	7.52E-1
	2	8.60E-1	9.62E-1	1.10E+0	1.23E+0	5.33E-1	6.06E-1	6.72E-1	7.66E-1
	4	8.90E-1	9.97E-1	1.13E+0	1.27E+0	5.39E-1	6.14E-1	6.80E-1	7.76E-1
	8	9.49E-1	1.06E+0	1.21E+0	1.36E+0	5.55E-1	6.33E-1	7.00E-1	7.99E-1
	12	1.02E+0	1.14E+0	1.30E+0	1.46E+0	5.86E-1	6.68E-1	7.38E-1	8.43E-1
1	24	1.31E+0	1.47E+0	1.66E+0	1.87E+0	7.71E-1	8.78E-1	9.70E-1	1.11E+0
2		2.18E+0	2.44E+0	2.76E+0	3.11E+0	1.69E+0	1.93E+0	2.13E+0	2.43E+0
4		3.88E+0	4.33E+0	4.91E+0	5.49E+0	1.00E+1	1.14E+1	1.26E+1	1.43E+1
8		4.77E+0	5.31E+0	6.04E+0	6.74E+0	6.96E+1	7.82E+1	8.76E+1	9.86E+1
10		4.96E+0	5.52E+0	6.27E+0	7.00E+0	8.03E+1	9.01E+1	1.01E+2	1.14E+2
20		5.89E+0	6.55E+0	7.45E+0	8.31E+0	9.89E+1	1.11E+2	1.24E+2	1.40E+2
30		6.92E+0	7.70E+0	8.75E+0	9.76E+0	1.16E+2	1.30E+2	1.46E+2	1.64E+2
5-y-old									
	1	9.11E-1	1.02E+0	1.16E+0	1.30E+0	4.79E-1	5.47E-1	6.01E-1	6.87E-1
	2	9.27E-1	1.04E+0	1.18E+0	1.32E+0	4.83E-1	5.53E-1	6.07E-1	6.95E-1
	4	9.56E-1	1.07E+0	1.21E+0	1.36E+0	4.88E-1	5.59E-1	6.12E-1	7.01E-1
	8	1.01E+0	1.14E+0	1.28E+0	1.44E+0	5.02E-1	5.74E-1	6.28E-1	7.19E-1
	12	1.08E+0	1.22E+0	1.37E+0	1.54E+0	5.28E-1	6.05E-1	6.62E-1	7.58E-1
1	24	1.36E+0	1.54E+0	1.72E+0	1.94E+0	6.90E-1	7.91E-1	8.66E-1	9.93E-1
2		2.18E+0	2.46E+0	2.74E+0	3.09E+0	1.51E+0	1.73E+0	1.90E+0	2.18E+0
4		3.66E+0	4.10E+0	4.57E+0	5.13E+0	8.94E+0	1.02E+1	1.13E+1	1.29E+1
8		4.42E+0	4.94E+0	5.51E+0	6.18E+0	6.45E+1	7.30E+1	8.12E+1	9.21E+1
10		4.59E+0	5.13E+0	5.72E+0	6.42E+0	7.48E+1	8.45E+1	9.41E+1	1.07E+2
20		5.45E+0	6.10E+0	6.80E+0	7.62E+0	9.22E+1	1.04E+2	1.16E+2	1.31E+2
30		6.41E+0	7.17E+0	7.99E+0	8.96E+0	1.08E+2	1.22E+2	1.36E+2	1.54E+2
10-y-old									
	1	9.05E-1	1.02E+0	1.15E+0	1.30E+0	4.72E-1	5.43E-1	5.91E-1	6.81E-1
	2	9.22E-1	1.04E+0	1.17E+0	1.32E+0	4.77E-1	5.49E-1	5.96E-1	6.88E-1
	4	9.50E-1	1.07E+0	1.20E+0	1.36E+0	4.81E-1	5.54E-1	6.01E-1	6.93E-1
	8	1.01E+0	1.14E+0	1.27E+0	1.44E+0	4.94E-1	5.69E-1	6.16E-1	7.09E-1
	12	1.08E+0	1.22E+0	1.36E+0	1.54E+0	5.21E-1	5.99E-1	6.48E-1	7.46E-1
1	24	1.36E+0	1.54E+0	1.71E+0	1.94E+0	6.80E-1	7.82E-1	8.46E-1	9.74E-1
2		2.20E+0	2.49E+0	2.76E+0	3.12E+0	1.49E+0	1.71E+0	1.85E+0	2.13E+0
4		3.77E+0	4.24E+0	4.70E+0	5.29E+0	8.82E+0	1.01E+1	1.10E+1	1.26E+1
8		4.58E+0	5.15E+0	5.72E+0	6.42E+0	6.47E+1	7.35E+1	8.07E+1	9.19E+1
10		4.76E+0	5.35E+0	5.94E+0	6.67E+0	7.51E+1	8.53E+1	9.38E+1	1.07E+2
20		5.66E+0	6.35E+0	7.06E+0	7.92E+0	9.27E+1	1.05E+2	1.16E+2	1.31E+2
30		6.66E+0	7.47E+0	8.30E+0	9.31E+0	1.08E+2	1.23E+2	1.35E+2	1.54E+2

Table A-20 (continued)

Time post intake		Pathway/model/low-energy threshold							
		Inhalation: Type S				Ingestion			
d	h	Standard width		Extra wide		Standard width		Extra wide	
		22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV	22.44 keV	32.34 keV
15-y-old									
	1	1.10E+0	1.25E+0	1.39E+0	1.59E+0	5.00E-1	5.80E-1	6.19E-1	7.19E-1
	2	1.12E+0	1.27E+0	1.41E+0	1.61E+0	5.04E-1	5.86E-1	6.23E-1	7.25E-1
	4	1.15E+0	1.31E+0	1.45E+0	1.65E+0	5.08E-1	5.92E-1	6.28E-1	7.30E-1
	8	1.21E+0	1.38E+0	1.52E+0	1.73E+0	5.22E-1	6.08E-1	6.45E-1	7.50E-1
	12	1.28E+0	1.46E+0	1.61E+0	1.84E+0	5.49E-1	6.40E-1	6.78E-1	7.89E-1
1	24	1.57E+0	1.80E+0	1.97E+0	2.25E+0	7.16E-1	8.34E-1	8.85E-1	1.03E+0
2		2.38E+0	2.71E+0	2.97E+0	3.40E+0	1.56E+0	1.82E+0	1.93E+0	2.25E+0
4		3.68E+0	4.19E+0	4.60E+0	5.23E+0	9.24E+0	1.07E+1	1.15E+1	1.33E+1
8		4.35E+0	4.94E+0	5.43E+0	6.16E+0	6.67E+1	7.63E+1	8.37E+1	9.60E+1
10		4.52E+0	5.13E+0	5.64E+0	6.40E+0	7.74E+1	8.83E+1	9.71E+1	1.11E+2
20		5.38E+0	6.10E+0	6.71E+0	7.62E+0	9.54E+1	1.09E+2	1.20E+2	1.37E+2
30		6.34E+0	7.19E+0	7.90E+0	8.97E+0	1.12E+2	1.27E+2	1.40E+2	1.60E+2
Adult male									
	1	1.13E+0	1.30E+0	1.45E+0	1.66E+0	5.32E-1	6.22E-1	6.58E-1	7.08E-1
	2	1.14E+0	1.31E+0	1.46E+0	1.67E+0	5.28E-1	6.17E-1	6.52E-1	6.97E-1
	4	1.16E+0	1.33E+0	1.48E+0	1.70E+0	5.25E-1	6.11E-1	6.49E-1	6.86E-1
	8	1.22E+0	1.39E+0	1.55E+0	1.77E+0	5.32E-1	6.16E-1	6.60E-1	6.92E-1
	12	1.28E+0	1.47E+0	1.63E+0	1.87E+0	5.56E-1	6.42E-1	6.90E-1	7.23E-1
1	24	1.57E+0	1.79E+0	1.99E+0	2.28E+0	7.19E-1	8.30E-1	8.94E-1	9.40E-1
2		2.36E+0	2.71E+0	2.99E+0	3.43E+0	1.56E+0	1.81E+0	1.94E+0	2.05E+0
4		3.65E+0	4.19E+0	4.64E+0	5.32E+0	9.28E+0	1.07E+1	1.15E+1	1.23E+1
8		4.31E+0	4.95E+0	5.48E+0	6.27E+0	6.85E+1	7.89E+1	8.61E+1	9.38E+1
10		4.48E+0	5.14E+0	5.69E+0	6.51E+0	7.97E+1	9.17E+1	1.00E+2	1.10E+2
20		5.32E+0	6.10E+0	6.76E+0	7.74E+0	9.83E+1	1.13E+2	1.24E+2	1.35E+2
30		6.25E+0	7.17E+0	7.94E+0	9.09E+0	1.15E+2	1.32E+2	1.45E+2	1.58E+2
Adult female									
	1	1.03E+0	1.17E+0	1.32E+0	1.51E+0	4.91E-1	5.68E-1	6.09E-1	7.68E-1
	2	1.04E+0	1.18E+0	1.33E+0	1.52E+0	4.82E-1	5.58E-1	6.00E-1	7.61E-1
	4	1.05E+0	1.20E+0	1.35E+0	1.54E+0	4.75E-1	5.48E-1	5.93E-1	7.56E-1
	8	1.10E+0	1.25E+0	1.40E+0	1.60E+0	4.80E-1	5.53E-1	6.00E-1	7.67E-1
	12	1.16E+0	1.32E+0	1.48E+0	1.69E+0	5.02E-1	5.78E-1	6.28E-1	8.02E-1
1	24	1.42E+0	1.62E+0	1.81E+0	2.07E+0	6.52E-1	7.50E-1	8.15E-1	1.04E+0
2		2.17E+0	2.47E+0	2.75E+0	3.15E+0	1.42E+0	1.64E+0	1.78E+0	2.25E+0
4		3.40E+0	3.86E+0	4.31E+0	4.92E+0	8.49E+0	9.77E+0	1.06E+1	1.34E+1
8		4.02E+0	4.57E+0	5.10E+0	5.82E+0	6.58E+1	7.51E+1	8.19E+1	9.90E+1
10		4.18E+0	4.74E+0	5.30E+0	6.04E+0	7.70E+1	8.78E+1	9.58E+1	1.15E+2
20		4.96E+0	5.63E+0	6.29E+0	7.17E+0	9.52E+1	1.09E+2	1.18E+2	1.42E+2
30		5.83E+0	6.62E+0	7.39E+0	8.42E+0	1.11E+2	1.27E+2	1.39E+2	1.66E+2

Table A-21. Inhaled Activity of Type M ⁶⁰Co vs. Exposure Rate (Bq per μR/h)

Time post intake		Distance from chest/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	9.99E+0	1.89E+1	9.26E+1	1.42E+2	3.26E+2	4.45E+2	6.95E+2	9.09E+2
	2	1.08E+1	1.94E+1	9.60E+1	1.42E+2	3.35E+2	4.46E+2	7.13E+2	9.11E+2
	4	1.16E+1	1.99E+1	1.01E+2	1.46E+2	3.48E+2	4.56E+2	7.40E+2	9.31E+2
	8	1.27E+1	2.10E+1	1.09E+2	1.54E+2	3.75E+2	4.82E+2	7.96E+2	9.85E+2
	12	1.42E+1	2.24E+1	1.20E+2	1.64E+2	4.09E+2	5.14E+2	8.64E+2	1.05E+3
1	24	1.94E+1	2.71E+1	1.60E+2	2.04E+2	5.38E+2	6.40E+2	1.13E+3	1.31E+3
2		3.20E+1	3.63E+1	2.72E+2	3.08E+2	8.98E+2	9.84E+2	1.88E+3	2.03E+3
4		4.99E+1	4.65E+1	4.76E+2	4.73E+2	1.56E+3	1.56E+3	3.25E+3	3.25E+3
8		5.90E+1	5.23E+1	5.91E+2	5.66E+2	1.94E+3	1.89E+3	4.04E+3	3.94E+3
10		6.13E+1	5.43E+1	6.17E+2	5.90E+2	2.03E+3	1.97E+3	4.22E+3	4.11E+3
20		7.16E+1	6.32E+1	7.25E+2	6.92E+2	2.39E+3	2.32E+3	4.97E+3	4.83E+3
30		8.09E+1	7.14E+1	8.19E+2	7.82E+2	2.70E+3	2.62E+3	5.61E+3	5.46E+3
1-y-old									
	1	1.66E+1	3.06E+1	1.02E+2	1.75E+2	3.40E+2	5.15E+2	7.20E+2	1.03E+3
	2	1.83E+1	3.20E+1	1.06E+2	1.76E+2	3.52E+2	5.14E+2	7.42E+2	1.03E+3
	4	1.98E+1	3.32E+1	1.12E+2	1.80E+2	3.67E+2	5.24E+2	7.71E+2	1.05E+3
	8	2.17E+1	3.50E+1	1.22E+2	1.90E+2	3.96E+2	5.52E+2	8.28E+2	1.10E+3
	12	2.40E+1	3.70E+1	1.34E+2	2.01E+2	4.31E+2	5.85E+2	8.98E+2	1.17E+3
1	24	3.22E+1	4.38E+1	1.80E+2	2.47E+2	5.69E+2	7.18E+2	1.18E+3	1.44E+3
2		5.03E+1	5.58E+1	3.10E+2	3.66E+2	9.66E+2	1.10E+3	1.99E+3	2.21E+3
4		7.30E+1	6.77E+1	5.48E+2	5.49E+2	1.72E+3	1.73E+3	3.53E+3	3.55E+3
8		8.35E+1	7.46E+1	6.72E+2	6.43E+2	2.13E+3	2.06E+3	4.37E+3	4.25E+3
10		8.63E+1	7.70E+1	6.97E+2	6.67E+2	2.21E+3	2.14E+3	4.53E+3	4.41E+3
20		9.92E+1	8.84E+1	8.05E+2	7.69E+2	2.55E+3	2.47E+3	5.24E+3	5.10E+3
30		1.12E+2	9.95E+1	9.04E+2	8.63E+2	2.86E+3	2.77E+3	5.88E+3	5.73E+3
5-y-old									
	1	2.78E+1	4.52E+1	1.31E+2	2.27E+2	4.17E+2	6.42E+2	8.73E+2	1.27E+3
	2	3.05E+1	4.74E+1	1.38E+2	2.29E+2	4.32E+2	6.42E+2	9.00E+2	1.27E+3
	4	3.29E+1	4.92E+1	1.46E+2	2.34E+2	4.51E+2	6.54E+2	9.35E+2	1.29E+3
	8	3.58E+1	5.16E+1	1.59E+2	2.47E+2	4.86E+2	6.87E+2	1.00E+3	1.36E+3
	12	3.92E+1	5.43E+1	1.74E+2	2.61E+2	5.28E+2	7.25E+2	1.09E+3	1.43E+3
1	24	5.08E+1	6.26E+1	2.33E+2	3.15E+2	6.92E+2	8.77E+2	1.41E+3	1.73E+3
2		7.28E+1	7.53E+1	3.83E+2	4.43E+2	1.13E+3	1.28E+3	2.30E+3	2.55E+3
4		9.55E+1	8.65E+1	6.21E+2	6.13E+2	1.88E+3	1.88E+3	3.82E+3	3.82E+3
8		1.06E+2	9.40E+1	7.38E+2	7.00E+2	2.26E+3	2.18E+3	4.60E+3	4.47E+3
10		1.10E+2	9.69E+1	7.63E+2	7.23E+2	2.34E+3	2.26E+3	4.77E+3	4.63E+3
20		1.26E+2	1.11E+2	8.77E+2	8.31E+2	2.70E+3	2.60E+3	5.49E+3	5.33E+3
30		1.41E+2	1.25E+2	9.85E+2	9.33E+2	3.03E+3	2.92E+3	6.16E+3	5.98E+3
10-y-old									
	1	3.76E+1	6.13E+1	1.45E+2	2.56E+2	4.34E+2	6.87E+2	8.95E+2	1.34E+3
	2	4.14E+1	6.47E+1	1.54E+2	2.60E+2	4.52E+2	6.88E+2	9.26E+2	1.34E+3
	4	4.46E+1	6.74E+1	1.64E+2	2.67E+2	4.74E+2	7.03E+2	9.65E+2	1.36E+3
	8	4.86E+1	7.07E+1	1.79E+2	2.83E+2	5.12E+2	7.40E+2	1.04E+3	1.43E+3
	12	5.32E+1	7.43E+1	1.97E+2	3.00E+2	5.58E+2	7.84E+2	1.13E+3	1.51E+3
1	24	6.84E+1	8.54E+1	2.64E+2	3.64E+2	7.37E+2	9.53E+2	1.47E+3	1.84E+3
2		9.63E+1	1.01E+2	4.34E+2	5.08E+2	1.22E+3	1.39E+3	2.42E+3	2.72E+3
4		1.24E+2	1.15E+2	6.95E+2	6.92E+2	2.03E+3	2.04E+3	4.07E+3	4.09E+3
8		1.37E+2	1.25E+2	8.20E+2	7.86E+2	2.44E+3	2.37E+3	4.91E+3	4.79E+3
10		1.41E+2	1.28E+2	8.49E+2	8.12E+2	2.53E+3	2.45E+3	5.09E+3	4.96E+3
20		1.62E+2	1.47E+2	9.76E+2	9.33E+2	2.91E+3	2.82E+3	5.87E+3	5.72E+3
30		1.83E+2	1.66E+2	1.10E+3	1.05E+3	3.27E+3	3.17E+3	6.59E+3	6.42E+3

Table A-21 (continued)

Time post intake		Distance from chest/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
15-y-old									
	1	5.77E+1	8.58E+1	1.97E+2	3.23E+2	5.44E+2	8.29E+2	1.09E+3	1.59E+3
	2	6.27E+1	9.02E+1	2.09E+2	3.30E+2	5.67E+2	8.33E+2	1.13E+3	1.59E+3
	4	6.72E+1	9.38E+1	2.21E+2	3.40E+2	5.93E+2	8.52E+2	1.18E+3	1.62E+3
	8	7.26E+1	9.79E+1	2.40E+2	3.58E+2	6.38E+2	8.96E+2	1.26E+3	1.70E+3
	12	7.84E+1	1.02E+2	2.62E+2	3.79E+2	6.91E+2	9.45E+2	1.36E+3	1.79E+3
1	24	9.65E+1	1.14E+2	3.41E+2	4.46E+2	8.90E+2	1.12E+3	1.73E+3	2.13E+3
2		1.25E+2	1.29E+2	5.13E+2	5.78E+2	1.37E+3	1.53E+3	2.66E+3	2.94E+3
4		1.49E+2	1.41E+2	7.28E+2	7.22E+2	2.05E+3	2.05E+3	4.04E+3	4.05E+3
8		1.63E+2	1.52E+2	8.29E+2	8.00E+2	2.37E+3	2.32E+3	4.71E+3	4.62E+3
10		1.68E+2	1.57E+2	8.56E+2	8.25E+2	2.45E+3	2.39E+3	4.88E+3	4.77E+3
20		1.93E+2	1.80E+2	9.83E+2	9.46E+2	2.82E+3	2.75E+3	5.61E+3	5.48E+3
30		2.18E+2	2.03E+2	1.11E+3	1.06E+3	3.17E+3	3.09E+3	6.30E+3	6.16E+3
Adult male									
	1	4.87E+1	8.44E+1	1.86E+2	3.37E+2	5.25E+2	8.65E+2	1.07E+3	1.45E+3
	2	5.38E+1	8.99E+1	1.94E+2	3.45E+2	5.40E+2	8.76E+2	1.09E+3	1.48E+3
	4	5.77E+1	9.50E+1	2.02E+2	3.60E+2	5.56E+2	9.05E+2	1.12E+3	1.53E+3
	8	6.14E+1	1.00E+2	2.16E+2	3.82E+2	5.92E+2	9.57E+2	1.19E+3	1.60E+3
	12	6.57E+1	1.05E+2	2.35E+2	4.02E+2	6.40E+2	1.01E+3	1.28E+3	1.68E+3
1	24	7.94E+1	1.16E+2	3.07E+2	4.69E+2	8.26E+2	1.19E+3	1.63E+3	1.98E+3
2		9.99E+1	1.34E+2	4.69E+2	6.13E+2	1.28E+3	1.62E+3	2.53E+3	2.75E+3
4		1.16E+2	1.50E+2	6.76E+2	7.87E+2	1.95E+3	2.21E+3	3.89E+3	3.82E+3
8		1.26E+2	1.62E+2	7.71E+2	8.78E+2	2.27E+3	2.50E+3	4.55E+3	4.36E+3
10		1.30E+2	1.66E+2	7.96E+2	9.05E+2	2.35E+3	2.59E+3	4.71E+3	4.51E+3
20		1.49E+2	1.90E+2	9.12E+2	1.03E+3	2.69E+3	2.96E+3	5.40E+3	5.16E+3
30		1.68E+2	2.13E+2	1.03E+3	1.16E+3	3.02E+3	3.32E+3	6.06E+3	5.78E+3
Adult female									
	1	4.85E+1	6.27E+1	1.82E+2	2.90E+2	5.20E+2	7.58E+2	1.06E+3	1.65E+3
	2	5.32E+1	6.81E+1	1.90E+2	3.04E+2	5.32E+2	7.78E+2	1.07E+3	1.66E+3
	4	5.80E+1	7.27E+1	2.00E+2	3.19E+2	5.50E+2	8.05E+2	1.10E+3	1.71E+3
	8	6.36E+1	7.65E+1	2.18E+2	3.36E+2	5.91E+2	8.45E+2	1.18E+3	1.80E+3
	12	6.89E+1	7.94E+1	2.39E+2	3.52E+2	6.44E+2	8.86E+2	1.28E+3	1.89E+3
1	24	8.37E+1	8.68E+1	3.17E+2	4.05E+2	8.44E+2	1.04E+3	1.66E+3	2.24E+3
2		1.06E+2	9.68E+1	4.88E+2	5.18E+2	1.32E+3	1.41E+3	2.59E+3	3.11E+3
4		1.24E+2	1.06E+2	7.05E+2	6.49E+2	2.02E+3	1.91E+3	3.99E+3	4.33E+3
8		1.34E+2	1.13E+2	8.05E+2	7.19E+2	2.34E+3	2.16E+3	4.67E+3	4.95E+3
10		1.38E+2	1.16E+2	8.31E+2	7.41E+2	2.42E+3	2.23E+3	4.83E+3	5.12E+3
20		1.58E+2	1.33E+2	9.52E+2	8.47E+2	2.78E+3	2.55E+3	5.54E+3	5.86E+3
30		1.77E+2	1.49E+2	1.07E+3	9.50E+2	3.12E+3	2.86E+3	6.22E+3	6.57E+3

Table A-22. Inhaled Activity of Type S ⁶⁰Co vs. Exposure Rate (Bq per μR/h)

Time post intake		Distance from chest/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	1.00E+1	1.88E+1	9.24E+1	1.42E+2	3.25E+2	4.45E+2	6.94E+2	9.09E+2
	2	1.09E+1	1.95E+1	9.59E+1	1.42E+2	3.34E+2	4.45E+2	7.11E+2	9.10E+2
	4	1.18E+1	2.03E+1	1.00E+2	1.45E+2	3.46E+2	4.54E+2	7.36E+2	9.27E+2
	8	1.30E+1	2.16E+1	1.08E+2	1.53E+2	3.71E+2	4.77E+2	7.85E+2	9.75E+2
	12	1.44E+1	2.29E+1	1.18E+2	1.62E+2	4.01E+2	5.06E+2	8.47E+2	1.03E+3
1	24	1.97E+1	2.75E+1	1.57E+2	2.00E+2	5.26E+2	6.27E+2	1.10E+3	1.28E+3
2		3.30E+1	3.73E+1	2.77E+2	3.16E+2	9.17E+2	1.01E+3	1.92E+3	2.08E+3
4		5.31E+1	4.83E+1	5.32E+2	5.26E+2	1.77E+3	1.76E+3	3.68E+3	3.66E+3
8		6.11E+1	5.28E+1	6.56E+2	6.19E+2	2.18E+3	2.10E+3	4.55E+3	4.40E+3
10		6.25E+1	5.39E+1	6.71E+2	6.33E+2	2.23E+3	2.15E+3	4.66E+3	4.50E+3
20		6.83E+1	5.89E+1	7.36E+2	6.94E+2	2.45E+3	2.36E+3	5.11E+3	4.93E+3
30		7.38E+1	6.36E+1	7.95E+2	7.50E+2	2.65E+3	2.55E+3	5.52E+3	5.33E+3
1-y-old									
	1	1.67E+1	3.04E+1	1.01E+2	1.75E+2	3.40E+2	5.15E+2	7.19E+2	1.03E+3
	2	1.84E+1	3.19E+1	1.06E+2	1.75E+2	3.51E+2	5.13E+2	7.40E+2	1.03E+3
	4	2.01E+1	3.34E+1	1.12E+2	1.79E+2	3.65E+2	5.22E+2	7.67E+2	1.04E+3
	8	2.20E+1	3.53E+1	1.21E+2	1.88E+2	3.92E+2	5.47E+2	8.20E+2	1.09E+3
	12	2.43E+1	3.72E+1	1.32E+2	1.99E+2	4.25E+2	5.77E+2	8.85E+2	1.15E+3
1	24	3.23E+1	4.35E+1	1.78E+2	2.42E+2	5.59E+2	7.05E+2	1.16E+3	1.41E+3
2		5.01E+1	5.49E+1	3.10E+2	3.65E+2	9.67E+2	1.10E+3	1.99E+3	2.22E+3
4		7.21E+1	6.59E+1	5.65E+2	5.63E+2	1.80E+3	1.80E+3	3.70E+3	3.71E+3
8		8.02E+1	7.06E+1	6.79E+2	6.44E+2	2.18E+3	2.10E+3	4.49E+3	4.35E+3
10		8.17E+1	7.19E+1	6.93E+2	6.57E+2	2.23E+3	2.14E+3	4.59E+3	4.44E+3
20		8.88E+1	7.81E+1	7.54E+2	7.14E+2	2.42E+3	2.33E+3	5.00E+3	4.84E+3
30		9.54E+1	8.40E+1	8.11E+2	7.68E+2	2.61E+3	2.51E+3	5.37E+3	5.20E+3
5-y-old									
	1	2.78E+1	4.45E+1	1.31E+2	2.26E+2	4.16E+2	6.40E+2	8.71E+2	1.27E+3
	2	3.07E+1	4.69E+1	1.38E+2	2.27E+2	4.31E+2	6.39E+2	8.98E+2	1.27E+3
	4	3.34E+1	4.91E+1	1.46E+2	2.33E+2	4.49E+2	6.50E+2	9.32E+2	1.29E+3
	8	3.65E+1	5.16E+1	1.58E+2	2.45E+2	4.81E+2	6.81E+2	9.94E+2	1.34E+3
	12	3.97E+1	5.41E+1	1.72E+2	2.58E+2	5.21E+2	7.16E+2	1.07E+3	1.41E+3
1	24	5.07E+1	6.14E+1	2.29E+2	3.09E+2	6.78E+2	8.60E+2	1.38E+3	1.70E+3
2		7.14E+1	7.26E+1	3.78E+2	4.36E+2	1.12E+3	1.26E+3	2.28E+3	2.53E+3
4		9.19E+1	8.21E+1	6.22E+2	6.09E+2	1.92E+3	1.90E+3	3.92E+3	3.89E+3
8		9.95E+1	8.69E+1	7.21E+2	6.78E+2	2.25E+3	2.16E+3	4.62E+3	4.46E+3
10		1.01E+2	8.85E+1	7.35E+2	6.91E+2	2.30E+3	2.20E+3	4.72E+3	4.55E+3
20		1.10E+2	9.62E+1	7.99E+2	7.51E+2	2.50E+3	2.39E+3	5.13E+3	4.95E+3
30		1.18E+2	1.04E+2	8.59E+2	8.08E+2	2.69E+3	2.58E+3	5.52E+3	5.32E+3
10-y-old									
	1	3.76E+1	6.04E+1	1.45E+2	2.55E+2	4.32E+2	6.85E+2	8.92E+2	1.34E+3
	2	4.17E+1	6.42E+1	1.54E+2	2.58E+2	4.51E+2	6.85E+2	9.23E+2	1.33E+3
	4	4.55E+1	6.75E+1	1.63E+2	2.66E+2	4.71E+2	6.99E+2	9.60E+2	1.36E+3
	8	4.97E+1	7.11E+1	1.77E+2	2.81E+2	5.06E+2	7.34E+2	1.03E+3	1.42E+3
	12	5.42E+1	7.45E+1	1.94E+2	2.97E+2	5.50E+2	7.74E+2	1.11E+3	1.49E+3
1	24	6.85E+1	8.40E+1	2.59E+2	3.56E+2	7.21E+2	9.33E+2	1.44E+3	1.80E+3
2		9.41E+1	9.78E+1	4.27E+2	4.98E+2	1.20E+3	1.37E+3	2.40E+3	2.70E+3
4		1.18E+2	1.09E+2	6.89E+2	6.82E+2	2.05E+3	2.05E+3	4.15E+3	4.17E+3
8		1.27E+2	1.15E+2	7.93E+2	7.55E+2	2.41E+3	2.33E+3	4.91E+3	4.77E+3
10		1.30E+2	1.17E+2	8.09E+2	7.69E+2	2.46E+3	2.38E+3	5.01E+3	4.87E+3
20		1.41E+2	1.27E+2	8.80E+2	8.37E+2	2.68E+3	2.59E+3	5.46E+3	5.30E+3
30		1.52E+2	1.37E+2	9.46E+2	8.99E+2	2.88E+3	2.78E+3	5.87E+3	5.70E+3

Table A-22 (continued)

Time post intake		Distance from chest/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
15-y-old									
	1	5.76E+1	8.39E+1	1.95E+2	3.20E+2	5.41E+2	8.23E+2	1.09E+3	1.58E+3
	2	6.32E+1	8.87E+1	2.08E+2	3.26E+2	5.65E+2	8.28E+2	1.13E+3	1.58E+3
	4	6.83E+1	9.30E+1	2.21E+2	3.37E+2	5.90E+2	8.46E+2	1.17E+3	1.61E+3
	8	7.40E+1	9.74E+1	2.38E+2	3.55E+2	6.31E+2	8.86E+2	1.24E+3	1.68E+3
	12	7.95E+1	1.01E+2	2.59E+2	3.73E+2	6.80E+2	9.30E+2	1.33E+3	1.76E+3
1	24	9.58E+1	1.11E+2	3.34E+2	4.35E+2	8.69E+2	1.09E+3	1.69E+3	2.08E+3
2		1.21E+2	1.23E+2	4.99E+2	5.60E+2	1.34E+3	1.49E+3	2.62E+3	2.89E+3
4		1.40E+2	1.32E+2	7.04E+2	6.95E+2	2.01E+3	2.01E+3	4.02E+3	4.02E+3
8		1.49E+2	1.39E+2	7.82E+2	7.51E+2	2.28E+3	2.22E+3	4.58E+3	4.47E+3
10		1.52E+2	1.41E+2	7.97E+2	7.65E+2	2.33E+3	2.26E+3	4.68E+3	4.56E+3
20		1.66E+2	1.54E+2	8.69E+2	8.33E+2	2.54E+3	2.46E+3	5.10E+3	4.97E+3
30		1.79E+2	1.66E+2	9.36E+2	8.97E+2	2.74E+3	2.65E+3	5.50E+3	5.36E+3
Adult male									
	1	4.75E+1	8.24E+1	1.83E+2	3.34E+2	5.21E+2	8.62E+2	1.06E+3	1.45E+3
	2	5.27E+1	8.81E+1	1.92E+2	3.43E+2	5.35E+2	8.73E+2	1.08E+3	1.48E+3
	4	5.66E+1	9.37E+1	1.99E+2	3.57E+2	5.49E+2	9.02E+2	1.11E+3	1.52E+3
	8	6.00E+1	9.90E+1	2.11E+2	3.79E+2	5.80E+2	9.52E+2	1.16E+3	1.59E+3
	12	6.39E+1	1.03E+2	2.28E+2	3.97E+2	6.23E+2	9.97E+2	1.25E+3	1.66E+3
1	24	7.61E+1	1.12E+2	2.96E+2	4.57E+2	7.99E+2	1.16E+3	1.58E+3	1.94E+3
2		9.41E+1	1.27E+2	4.51E+2	5.96E+2	1.25E+3	1.59E+3	2.47E+3	2.70E+3
4		1.08E+2	1.40E+2	6.48E+2	7.63E+2	1.91E+3	2.19E+3	3.85E+3	3.79E+3
8		1.14E+2	1.47E+2	7.22E+2	8.30E+2	2.17E+3	2.42E+3	4.41E+3	4.23E+3
10		1.16E+2	1.50E+2	7.36E+2	8.46E+2	2.22E+3	2.47E+3	4.50E+3	4.31E+3
20		1.26E+2	1.62E+2	8.01E+2	9.18E+2	2.41E+3	2.68E+3	4.89E+3	4.69E+3
30		1.36E+2	1.74E+2	8.62E+2	9.85E+2	2.60E+3	2.88E+3	5.26E+3	5.03E+3
Adult female									
	1	4.77E+1	6.08E+1	1.81E+2	2.86E+2	5.17E+2	7.53E+2	1.05E+3	1.65E+3
	2	5.26E+1	6.64E+1	1.89E+2	3.01E+2	5.29E+2	7.73E+2	1.07E+3	1.66E+3
	4	5.77E+1	7.15E+1	1.98E+2	3.16E+2	5.44E+2	8.01E+2	1.09E+3	1.70E+3
	8	6.34E+1	7.54E+1	2.15E+2	3.33E+2	5.82E+2	8.37E+2	1.16E+3	1.79E+3
	12	6.85E+1	7.80E+1	2.35E+2	3.47E+2	6.31E+2	8.73E+2	1.25E+3	1.88E+3
1	24	8.20E+1	8.37E+1	3.09E+2	3.94E+2	8.21E+2	1.01E+3	1.61E+3	2.20E+3
2		1.01E+2	9.13E+1	4.76E+2	5.01E+2	1.30E+3	1.38E+3	2.55E+3	3.07E+3
4		1.16E+2	9.79E+1	6.85E+2	6.23E+2	1.99E+3	1.87E+3	3.99E+3	4.34E+3
8		1.23E+2	1.02E+2	7.63E+2	6.74E+2	2.27E+3	2.07E+3	4.57E+3	4.85E+3
10		1.25E+2	1.04E+2	7.78E+2	6.87E+2	2.31E+3	2.11E+3	4.66E+3	4.94E+3
20		1.36E+2	1.13E+2	8.45E+2	7.45E+2	2.52E+3	2.29E+3	5.07E+3	5.37E+3
30		1.46E+2	1.21E+2	9.09E+2	8.00E+2	2.71E+3	2.46E+3	5.45E+3	5.77E+3

Table A-23. Ingested Activity of ⁶⁰Co vs. Exposure Rate (Bq per μR/h)

Time post intake		Distance from abdomen/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	4.73E+0	7.71E+0	5.93E+1	7.24E+1	2.03E+2	2.35E+2	4.27E+2	4.84E+2
	2	5.39E+0	7.62E+0	6.15E+1	7.10E+1	2.08E+2	2.30E+2	4.35E+2	4.77E+2
	4	6.02E+0	7.92E+0	6.39E+1	7.17E+1	2.14E+2	2.32E+2	4.46E+2	4.80E+2
	8	6.77E+0	8.70E+0	6.88E+1	7.62E+1	2.29E+2	2.46E+2	4.76E+2	5.08E+2
	12	7.57E+0	9.54E+0	7.47E+1	8.19E+1	2.47E+2	2.64E+2	5.14E+2	5.45E+2
1	24	1.05E+1	1.25E+1	9.66E+1	1.03E+2	3.16E+2	3.31E+2	6.56E+2	6.85E+2
2		1.78E+1	2.00E+1	1.53E+2	1.59E+2	4.93E+2	5.06E+2	1.02E+3	1.05E+3
4		3.10E+1	3.31E+1	2.55E+2	2.58E+2	8.13E+2	8.20E+2	1.68E+3	1.69E+3
8		4.32E+1	4.56E+1	3.54E+2	3.56E+2	1.12E+3	1.13E+3	2.32E+3	2.33E+3
10		4.78E+1	5.04E+1	3.91E+2	3.93E+2	1.24E+3	1.25E+3	2.56E+3	2.57E+3
20		6.71E+1	7.07E+1	5.49E+2	5.52E+2	1.74E+3	1.75E+3	3.59E+3	3.60E+3
30		7.97E+1	8.39E+1	6.51E+2	6.55E+2	2.07E+3	2.07E+3	4.27E+3	4.28E+3
1-y-old									
	1	6.65E+0	1.20E+1	6.60E+1	8.66E+1	2.19E+2	2.69E+2	4.57E+2	5.46E+2
	2	7.73E+0	1.18E+1	6.89E+1	8.45E+1	2.25E+2	2.63E+2	4.67E+2	5.35E+2
	4	8.53E+0	1.22E+1	7.08E+1	8.52E+1	2.29E+2	2.63E+2	4.74E+2	5.35E+2
	8	9.38E+0	1.35E+1	7.45E+1	8.95E+1	2.39E+2	2.74E+2	4.93E+2	5.55E+2
	12	1.05E+1	1.49E+1	8.04E+1	9.53E+1	2.56E+2	2.90E+2	5.27E+2	5.88E+2
1	24	1.55E+1	2.04E+1	1.08E+2	1.22E+2	3.37E+2	3.70E+2	6.91E+2	7.50E+2
2		3.23E+1	3.89E+1	2.05E+2	2.23E+2	6.29E+2	6.68E+2	1.28E+3	1.35E+3
4		8.39E+1	9.30E+1	5.15E+2	5.32E+2	1.54E+3	1.57E+3	3.11E+3	3.17E+3
8		1.38E+2	1.49E+2	8.54E+2	8.63E+2	2.51E+3	2.53E+3	5.06E+3	5.09E+3
10		1.54E+2	1.65E+2	9.48E+2	9.57E+2	2.79E+3	2.81E+3	5.62E+3	5.64E+3
20		2.16E+2	2.32E+2	1.33E+3	1.35E+3	3.92E+3	3.95E+3	7.90E+3	7.93E+3
30		2.57E+2	2.76E+2	1.59E+3	1.60E+3	4.66E+3	4.69E+3	9.39E+3	9.42E+3
5-y-old									
	1	8.63E+0	1.62E+1	7.11E+1	9.71E+1	2.31E+2	2.92E+2	4.80E+2	5.88E+2
	2	1.03E+1	1.61E+1	7.50E+1	9.49E+1	2.39E+2	2.85E+2	4.92E+2	5.75E+2
	4	1.16E+1	1.69E+1	7.77E+1	9.59E+1	2.43E+2	2.85E+2	4.99E+2	5.74E+2
	8	1.29E+1	1.88E+1	8.20E+1	1.01E+2	2.54E+2	2.96E+2	5.19E+2	5.94E+2
	12	1.46E+1	2.09E+1	8.90E+1	1.08E+2	2.72E+2	3.14E+2	5.55E+2	6.28E+2
1	24	2.21E+1	2.94E+1	1.21E+2	1.40E+2	3.61E+2	4.02E+2	7.31E+2	8.03E+2
2		4.70E+1	5.72E+1	2.34E+2	2.58E+2	6.81E+2	7.29E+2	1.36E+3	1.45E+3
4		1.22E+2	1.36E+2	6.02E+2	6.25E+2	1.69E+3	1.73E+3	3.33E+3	3.41E+3
8		1.99E+2	2.17E+2	1.01E+3	1.02E+3	2.78E+3	2.80E+3	5.45E+3	5.48E+3
10		2.21E+2	2.40E+2	1.12E+3	1.13E+3	3.08E+3	3.10E+3	6.05E+3	6.08E+3
20		3.11E+2	3.38E+2	1.58E+3	1.60E+3	4.34E+3	4.37E+3	8.51E+3	8.55E+3
30		3.70E+2	4.02E+2	1.88E+3	1.90E+3	5.16E+3	5.19E+3	1.01E+4	1.02E+4
10-y-old									
	1	1.10E+1	2.11E+1	7.63E+1	1.08E+2	2.41E+2	3.13E+2	4.98E+2	6.24E+2
	2	1.35E+1	2.13E+1	8.14E+1	1.05E+2	2.50E+2	3.05E+2	5.13E+2	6.09E+2
	4	1.54E+1	2.23E+1	8.50E+1	1.07E+2	2.57E+2	3.06E+2	5.22E+2	6.09E+2
	8	1.72E+1	2.51E+1	9.03E+1	1.14E+2	2.69E+2	3.19E+2	5.43E+2	6.31E+2
	12	1.97E+1	2.82E+1	9.85E+1	1.22E+2	2.89E+2	3.39E+2	5.82E+2	6.68E+2
1	24	3.02E+1	4.04E+1	1.35E+2	1.60E+2	3.86E+2	4.35E+2	7.69E+2	8.54E+2
2		6.52E+1	7.96E+1	2.66E+2	2.97E+2	7.33E+2	7.93E+2	1.44E+3	1.54E+3
4		1.67E+2	1.86E+2	6.97E+2	7.29E+2	1.84E+3	1.90E+3	3.56E+3	3.65E+3
8		2.69E+2	2.92E+2	1.18E+3	1.20E+3	3.06E+3	3.08E+3	5.84E+3	5.88E+3
10		2.99E+2	3.24E+2	1.31E+3	1.33E+3	3.40E+3	3.42E+3	6.49E+3	6.52E+3
20		4.21E+2	4.56E+2	1.85E+3	1.87E+3	4.79E+3	4.81E+3	9.14E+3	9.17E+3
30		5.01E+2	5.42E+2	2.20E+3	2.22E+3	5.69E+3	5.72E+3	1.09E+4	1.09E+4

Table A-23 (continued)

Time post intake		Distance from abdomen/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
15-y-old									
	1	1.53E+1	2.97E+1	8.55E+1	1.25E+2	2.58E+2	3.46E+2	5.25E+2	6.80E+2
	2	1.91E+1	3.04E+1	9.22E+1	1.23E+2	2.70E+2	3.38E+2	5.44E+2	6.63E+2
	4	2.20E+1	3.21E+1	9.68E+1	1.26E+2	2.77E+2	3.40E+2	5.54E+2	6.64E+2
	8	2.46E+1	3.62E+1	1.03E+2	1.35E+2	2.91E+2	3.56E+2	5.78E+2	6.89E+2
	12	2.82E+1	4.10E+1	1.14E+2	1.46E+2	3.14E+2	3.79E+2	6.20E+2	7.30E+2
1	24	4.40E+1	5.96E+1	1.58E+2	1.92E+2	4.23E+2	4.88E+2	8.25E+2	9.34E+2
2		9.54E+1	1.17E+2	3.15E+2	3.58E+2	8.11E+2	8.90E+2	1.56E+3	1.69E+3
4		2.35E+2	2.63E+2	8.26E+2	8.70E+2	2.05E+3	2.13E+3	3.86E+3	3.97E+3
8		3.69E+2	4.02E+2	1.39E+3	1.42E+3	3.41E+3	3.44E+3	6.36E+3	6.39E+3
10		4.09E+2	4.45E+2	1.55E+3	1.57E+3	3.79E+3	3.82E+3	7.06E+3	7.09E+3
20		5.76E+2	6.25E+2	2.18E+3	2.21E+3	5.34E+3	5.38E+3	9.94E+3	9.98E+3
30		6.85E+2	7.43E+2	2.59E+3	2.63E+3	6.35E+3	6.39E+3	1.18E+4	1.19E+4
Adult male									
	1	1.83E+1	3.25E+1	9.94E+1	1.39E+2	2.89E+2	3.73E+2	5.77E+2	6.67E+2
	2	2.00E+1	3.51E+1	1.01E+2	1.41E+2	2.90E+2	3.73E+2	5.77E+2	6.79E+2
	4	2.00E+1	3.94E+1	9.97E+1	1.48E+2	2.84E+2	3.85E+2	5.67E+2	6.93E+2
	8	2.09E+1	4.62E+1	1.02E+2	1.59E+2	2.88E+2	4.06E+2	5.73E+2	7.10E+2
	12	2.40E+1	5.21E+1	1.11E+2	1.70E+2	3.08E+2	4.27E+2	6.07E+2	7.36E+2
1	24	4.14E+1	7.35E+1	1.61E+2	2.18E+2	4.21E+2	5.39E+2	8.14E+2	9.16E+2
2		1.19E+2	1.57E+2	3.72E+2	4.43E+2	9.21E+2	1.08E+3	1.74E+3	1.82E+3
4		5.73E+2	5.85E+2	1.69E+3	1.74E+3	4.02E+3	4.18E+3	7.43E+3	7.16E+3
8		1.49E+3	1.33E+3	5.04E+3	4.41E+3	1.16E+4	1.05E+4	2.08E+4	1.84E+4
10		1.68E+3	1.49E+3	5.73E+3	4.97E+3	1.31E+4	1.18E+4	2.36E+4	2.07E+4
20		2.38E+3	2.10E+3	8.12E+3	7.02E+3	1.86E+4	1.67E+4	3.34E+4	2.93E+4
30		2.83E+3	2.49E+3	9.67E+3	8.34E+3	2.22E+4	1.98E+4	3.97E+4	3.48E+4
Adult female									
	1	1.73E+01	2.95E+1	9.06E+1	1.27E+2	2.64E+2	3.44E+2	5.32E+2	7.24E+2
	2	2.02E+1	3.49E+1	9.16E+1	1.33E+2	2.62E+2	3.51E+2	5.25E+2	7.22E+2
	4	2.36E+1	4.10E+1	9.20E+1	1.39E+2	2.59E+2	3.60E+2	5.19E+2	7.41E+2
	8	2.84E+1	4.74E+1	9.71E+1	1.46E+2	2.69E+2	3.70E+2	5.35E+2	7.75E+2
	12	3.37E+1	5.29E+1	1.07E+2	1.53E+2	2.92E+2	3.85E+2	5.76E+2	8.11E+2
1	24	5.54E+1	7.36E+1	1.57E+2	1.94E+2	4.08E+2	4.80E+2	7.92E+2	1.02E+3
2		1.39E+2	1.54E+2	3.62E+2	3.92E+2	9.02E+2	9.58E+2	1.72E+3	2.03E+3
4		5.29E+2	5.31E+2	1.57E+3	1.55E+3	3.83E+3	3.79E+3	7.17E+3	7.79E+3
8		1.12E+3	1.11E+3	4.25E+3	4.00E+3	1.03E+4	9.85E+3	1.90E+4	1.93E+4
10		1.25E+3	1.24E+3	4.80E+3	4.51E+3	1.17E+4	1.11E+4	2.15E+4	2.18E+4
20		1.76E+3	1.74E+3	6.79E+3	6.37E+3	1.65E+4	1.57E+4	3.04E+4	3.07E+4
30		2.10E+3	2.07E+3	8.08E+3	7.57E+3	1.96E+4	1.87E+4	3.61E+4	3.65E+4

Table A-24. Inhaled Activity of Type $F^{131}\text{I}$ vs. Exposure Rate (Bq per $\mu\text{R/h}$)

Time post intake		Distance from body/aspect									
		2 in		1 ft		2 ft		3 ft		Thyroid: anterior	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	2 in	1 ft
Infant											
	1	5.65E+1	1.19E+2	5.34E+2	8.91E+2	1.82E+3	2.73E+3	3.84E+3	5.52E+3	2.04E+1	4.22E+2
	2	6.02E+1	1.23E+2	5.67E+2	9.31E+2	1.93E+3	2.85E+3	4.07E+3	5.78E+3	2.12E+1	4.45E+2
	4	6.84E+1	1.38E+2	6.40E+2	1.06E+3	2.18E+3	3.25E+3	4.59E+3	6.57E+3	2.29E+1	4.98E+2
	8	8.61E+1	1.76E+2	7.97E+2	1.35E+3	2.72E+3	4.17E+3	5.74E+3	8.44E+3	2.69E+1	6.09E+2
	12	1.06E+2	2.15E+2	9.66E+2	1.67E+3	3.31E+3	5.16E+3	6.96E+3	1.04E+4	3.15E+1	7.28E+2
1	24	1.71E+2	3.14E+2	1.51E+3	2.53E+3	5.11E+3	7.92E+3	1.07E+4	1.61E+4	4.86E+1	1.11E+3
2		3.08E+2	4.26E+2	2.54E+3	3.63E+3	8.36E+3	1.15E+4	1.74E+4	2.35E+4	9.82E+1	1.86E+3
4		5.36E+2	5.75E+2	4.14E+3	5.05E+3	1.32E+4	1.62E+4	2.72E+4	3.31E+4	2.15E+2	3.07E+3
8		9.54E+2	9.72E+2	7.27E+3	8.56E+3	2.30E+4	2.75E+4	4.72E+4	5.63E+4	4.11E+2	5.41E+3
10		1.24E+3	1.26E+3	9.45E+3	1.11E+4	2.99E+4	3.57E+4	6.13E+4	7.32E+4	5.36E+2	7.04E+3
20		4.61E+3	4.69E+3	3.51E+4	4.13E+4	1.11E+5	1.32E+5	2.28E+5	2.71E+5	1.99E+3	2.61E+4
30		1.70E+4	1.73E+4	1.30E+5	1.52E+5	4.10E+5	4.90E+5	8.41E+5	1.00E+6	7.35E+3	9.66E+4
1-y-old											
	1	9.21E+1	2.01E+2	5.90E+2	1.14E+3	1.93E+3	3.28E+3	4.02E+3	6.48E+3	3.88E+1	4.34E+2
	2	9.79E+1	2.07E+2	6.27E+2	1.19E+3	2.05E+3	3.42E+3	4.25E+3	6.75E+3	4.01E+1	4.57E+2
	4	1.12E+2	2.33E+2	7.07E+2	1.34E+3	2.31E+3	3.89E+3	4.79E+3	7.68E+3	4.31E+1	5.06E+2
	8	1.42E+2	2.98E+2	8.81E+2	1.73E+3	2.87E+3	5.03E+3	5.97E+3	9.93E+3	5.00E+1	6.12E+2
	12	1.76E+2	3.65E+2	1.07E+3	2.14E+3	3.49E+3	6.25E+3	7.25E+3	1.24E+4	5.78E+1	7.26E+2
1	24	2.88E+2	5.31E+2	1.68E+3	3.23E+3	5.40E+3	9.58E+3	1.12E+4	1.91E+4	8.64E+1	1.09E+3
2		5.12E+2	7.02E+2	2.89E+3	4.49E+3	8.90E+3	1.36E+4	1.82E+4	2.72E+4	1.63E+2	1.86E+3
4		8.54E+2	9.15E+2	4.72E+3	6.00E+3	1.40E+4	1.82E+4	2.81E+4	3.67E+4	3.20E+2	3.08E+3
8		1.44E+3	1.47E+3	7.93E+3	9.65E+3	2.32E+4	2.94E+4	4.65E+4	5.90E+4	5.68E+2	5.21E+3
10		1.83E+3	1.87E+3	1.01E+4	1.22E+4	2.95E+4	3.73E+4	5.91E+4	7.49E+4	7.24E+2	6.63E+3
20		6.09E+3	6.21E+3	3.35E+4	4.07E+4	9.79E+4	1.24E+5	1.96E+5	2.49E+5	2.41E+3	2.20E+4
30		2.02E+4	2.06E+4	1.11E+5	1.35E+5	3.25E+5	4.11E+5	6.52E+5	8.27E+5	8.00E+3	7.32E+4
5-y-old											
	1	1.55E+2	3.22E+2	7.76E+2	1.53E+3	2.40E+3	4.22E+3	4.95E+3	8.20E+3	6.07E+1	5.32E+2
	2	1.65E+2	3.30E+2	8.19E+2	1.58E+3	2.51E+3	4.34E+3	5.16E+3	8.43E+3	6.25E+1	5.55E+2
	4	1.88E+2	3.71E+2	9.11E+2	1.76E+3	2.77E+3	4.82E+3	5.68E+3	9.37E+3	6.69E+1	6.06E+2
	8	2.43E+2	4.72E+2	1.13E+3	2.23E+3	3.44E+3	6.14E+3	7.04E+3	1.20E+4	7.68E+1	7.21E+2
	12	3.06E+2	5.78E+2	1.39E+3	2.74E+3	4.21E+3	7.62E+3	8.63E+3	1.49E+4	8.82E+1	8.49E+2
1	24	5.18E+2	8.40E+2	2.25E+3	4.08E+3	6.72E+3	1.16E+4	1.37E+4	2.30E+4	1.30E+2	1.27E+3
2		9.29E+2	1.10E+3	3.94E+3	5.53E+3	1.12E+4	1.61E+4	2.24E+4	3.23E+4	2.41E+2	2.15E+3
4		1.50E+3	1.39E+3	6.39E+3	7.17E+3	1.73E+4	2.10E+4	3.39E+4	4.22E+4	4.58E+2	3.54E+3
8		2.41E+3	2.14E+3	1.02E+4	1.10E+4	2.73E+4	3.21E+4	5.33E+4	6.45E+4	7.74E+2	5.72E+3
10		2.98E+3	2.65E+3	1.27E+4	1.36E+4	3.39E+4	3.98E+4	6.60E+4	7.97E+4	9.63E+2	7.10E+3
20		8.78E+3	7.80E+3	3.73E+4	4.00E+4	9.97E+4	1.17E+5	1.94E+5	2.34E+5	2.85E+3	2.10E+4
30		2.59E+4	2.30E+4	1.10E+5	1.18E+5	2.94E+5	3.45E+5	5.74E+5	6.92E+5	8.41E+3	6.19E+4
10-y-old											
	1	2.08E+2	4.36E+2	8.65E+2	1.76E+3	2.54E+3	4.62E+3	5.14E+3	8.80E+3	6.91E+1	5.74E+2
	2	2.19E+2	4.48E+2	9.15E+2	1.82E+3	2.66E+3	4.76E+3	5.37E+3	9.05E+3	7.08E+1	5.96E+2
	4	2.49E+2	5.08E+2	1.02E+3	2.05E+3	2.93E+3	5.32E+3	5.89E+3	1.01E+4	7.49E+1	6.44E+2
	8	3.21E+2	6.66E+2	1.25E+3	2.61E+3	3.60E+3	6.79E+3	7.24E+3	1.29E+4	8.43E+1	7.53E+2
	12	4.04E+2	8.37E+2	1.52E+3	3.24E+3	4.37E+3	8.46E+3	8.80E+3	1.62E+4	9.53E+1	8.72E+2
1	24	6.79E+2	1.29E+3	2.40E+3	4.90E+3	6.81E+3	1.30E+4	1.37E+4	2.52E+4	1.35E+2	1.26E+3
2		1.20E+3	1.74E+3	4.08E+3	6.70E+3	1.11E+4	1.82E+4	2.20E+4	3.55E+4	2.38E+2	2.08E+3
4		1.89E+3	2.18E+3	6.38E+3	8.59E+3	1.67E+4	2.34E+4	3.26E+4	4.60E+4	4.18E+2	3.31E+3
8		2.87E+3	3.17E+3	9.69E+3	1.25E+4	2.51E+4	3.41E+4	4.88E+4	6.68E+4	6.60E+2	5.08E+3
10		3.46E+3	3.82E+3	1.17E+4	1.50E+4	3.02E+4	4.09E+4	5.87E+4	8.02E+4	8.01E+2	6.15E+3
20		8.86E+3	9.76E+3	3.00E+4	3.84E+4	7.74E+4	1.04E+5	1.50E+5	2.04E+5	2.08E+3	1.59E+4
30		2.29E+4	2.51E+4	7.73E+4	9.89E+4	2.00E+5	2.68E+5	3.87E+5	5.24E+5	5.38E+3	4.10E+4

Table A-24 (continued)

Time post intake		Distance from body/aspect									
		2 in		1 ft		2 ft		3 ft		Thyroid: anterior	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	2 in	1 ft
15-y-old											
	1	3.30E+2	6.90E+2	1.19E+3	2.36E+3	3.24E+3	5.80E+3	6.38E+3	1.08E+4	1.03E+2	7.91E+2
	2	3.47E+2	7.15E+2	1.26E+3	2.45E+3	3.40E+3	6.01E+3	6.66E+3	1.12E+4	1.05E+2	8.16E+2
	4	3.98E+2	8.25E+2	1.41E+3	2.79E+3	3.74E+3	6.77E+3	7.31E+3	1.26E+4	1.09E+2	8.72E+2
	8	5.21E+2	1.11E+3	1.75E+3	3.63E+3	4.60E+3	8.73E+3	8.99E+3	1.62E+4	1.19E+2	9.96E+2
	12	6.65E+2	1.45E+3	2.13E+3	4.57E+3	5.58E+3	1.09E+4	1.09E+4	2.03E+4	1.31E+2	1.13E+3
1	24	1.15E+3	2.40E+3	3.35E+3	7.14E+3	8.62E+3	1.71E+4	1.68E+4	3.19E+4	1.75E+2	1.56E+3
	2	2.02E+3	3.35E+3	5.54E+3	9.93E+3	1.37E+4	2.39E+4	2.63E+4	4.49E+4	2.81E+2	2.43E+3
	4	3.12E+3	4.19E+3	8.40E+3	1.27E+4	2.00E+4	3.07E+4	3.80E+4	5.78E+4	4.52E+2	3.68E+3
	8	4.69E+3	6.03E+3	1.26E+4	1.84E+4	2.99E+4	4.44E+4	5.64E+4	8.34E+4	6.97E+2	5.58E+3
	10	5.63E+3	7.23E+3	1.52E+4	2.20E+4	3.59E+4	5.32E+4	6.79E+4	9.99E+4	8.44E+2	6.74E+3
	20	1.42E+4	1.81E+4	3.85E+4	5.54E+4	9.10E+4	1.34E+5	1.72E+5	2.51E+5	2.17E+3	1.72E+4
	30	3.62E+4	4.61E+4	9.81E+4	1.41E+5	2.32E+5	3.39E+5	4.37E+5	6.36E+5	5.55E+3	4.40E+4
Adult male											
	1	3.78E+2	6.94E+2	1.26E+3	2.39E+3	3.34E+3	5.76E+3	6.57E+3	1.06E+4	3.11E+2	8.54E+2
	2	4.05E+2	7.36E+2	1.33E+3	2.50E+3	3.50E+3	5.97E+3	6.82E+3	1.10E+4	2.84E+2	8.86E+2
	4	4.51E+2	8.60E+2	1.46E+3	2.85E+3	3.81E+3	6.74E+3	7.43E+3	1.24E+4	2.49E+2	9.49E+2
	8	5.29E+2	1.17E+3	1.72E+3	3.75E+3	4.56E+3	8.87E+3	8.96E+3	1.63E+4	2.17E+2	1.09E+3
	12	6.01E+2	1.52E+3	1.98E+3	4.80E+3	5.39E+3	1.14E+4	1.07E+4	2.11E+4	2.03E+2	1.24E+3
1	24	7.73E+2	2.50E+3	2.74E+3	7.80E+3	7.78E+3	1.91E+4	1.57E+4	3.57E+4	1.99E+2	1.70E+3
	2	9.81E+2	3.42E+3	3.94E+3	1.10E+4	1.15E+4	2.79E+4	2.34E+4	5.30E+4	2.22E+2	2.57E+3
	4	1.25E+3	4.21E+3	5.49E+3	1.40E+4	1.62E+4	3.61E+4	3.30E+4	6.89E+4	2.76E+2	3.79E+3
	8	1.83E+3	6.01E+3	8.12E+3	2.01E+4	2.40E+4	5.17E+4	4.86E+4	9.85E+4	4.04E+2	5.68E+3
	10	2.21E+3	7.18E+3	9.77E+3	2.40E+4	2.88E+4	6.16E+4	5.83E+4	1.17E+5	4.87E+2	6.84E+3
	20	5.57E+3	1.77E+4	2.45E+4	5.89E+4	7.21E+4	1.50E+5	1.45E+5	2.85E+5	1.24E+3	1.73E+4
	30	1.41E+4	4.40E+4	6.18E+4	1.46E+5	1.81E+5	3.72E+5	3.64E+5	7.04E+5	3.14E+3	4.35E+4
Adult female											
	1	3.34E+2	5.30E+2	1.17E+3	2.09E+3	3.17E+3	5.12E+3	6.27E+3	9.51E+3	1.82E+2	9.29E+2
	2	3.49E+2	5.63E+2	1.22E+3	2.21E+3	3.29E+3	5.39E+3	6.47E+3	9.96E+3	1.74E+2	9.70E+2
	4	3.78E+2	6.56E+2	1.33E+3	2.54E+3	3.57E+3	6.14E+3	7.03E+3	1.13E+4	1.63E+2	1.04E+3
	8	4.33E+2	8.82E+2	1.56E+3	3.34E+3	4.29E+3	8.08E+3	8.51E+3	1.49E+4	1.53E+2	1.19E+3
	12	4.86E+2	1.14E+3	1.82E+3	4.25E+3	5.10E+3	1.03E+4	1.02E+4	1.92E+4	1.50E+2	1.35E+3
1	24	6.20E+2	1.83E+3	2.56E+3	6.81E+3	7.48E+3	1.71E+4	1.52E+4	3.21E+4	1.60E+2	1.82E+3
	2	8.10E+2	2.49E+3	3.75E+3	9.57E+3	1.12E+4	2.51E+4	2.29E+4	4.82E+4	1.92E+2	2.69E+3
	4	1.06E+3	3.08E+3	5.29E+3	1.22E+4	1.59E+4	3.28E+4	3.24E+4	6.35E+4	2.49E+2	3.90E+3
	8	1.56E+3	4.42E+3	7.84E+3	1.75E+4	2.35E+4	4.70E+4	4.78E+4	9.11E+4	3.66E+2	5.83E+3
	10	1.88E+3	5.29E+3	9.43E+3	2.10E+4	2.82E+4	5.61E+4	5.73E+4	1.09E+5	4.42E+2	7.03E+3
	20	4.76E+3	1.31E+4	2.37E+4	5.15E+4	7.06E+4	1.37E+5	1.43E+5	2.64E+5	1.12E+3	1.77E+4
	30	1.20E+4	3.27E+4	5.96E+4	1.28E+5	1.77E+5	3.39E+5	3.57E+5	6.53E+5	2.85E+3	4.48E+4

Table A-25. Ingested Activity of ¹³¹I vs. Exposure Rate (Bq per μR/h)

Time post intake		Distance from body/aspect								Thyroid: anterior	
d	h	2 in		1 ft		2 ft		3 ft		2 in	1 ft
Infant											
1	1	2.97E+1	4.98E+1	3.42E+2	4.30E+2	1.13E+3	1.34E+3	2.34E+3	2.75E+3	5.18E+1	3.08E+2
1	2	3.71E+1	5.15E+1	3.76E+2	4.35E+2	1.21E+3	1.35E+3	2.51E+3	2.79E+3	4.84E+1	3.31E+2
1	4	4.91E+1	6.03E+1	4.44E+2	4.92E+2	1.41E+3	1.53E+3	2.90E+3	3.14E+3	4.86E+1	3.78E+2
1	8	7.31E+1	8.64E+1	5.96E+2	6.57E+2	1.85E+3	2.02E+3	3.78E+3	4.14E+3	5.24E+1	4.76E+2
1	12	1.03E+2	1.19E+2	7.61E+2	8.39E+2	2.31E+3	2.56E+3	4.69E+3	5.23E+3	5.59E+1	5.71E+2
1	24	2.17E+2	2.32E+2	1.19E+3	1.32E+3	3.45E+3	3.95E+3	6.89E+3	7.98E+3	6.32E+1	7.84E+2
2	2	3.47E+2	3.48E+2	1.57E+3	1.73E+3	4.44E+3	5.16E+3	8.82E+3	1.04E+4	7.35E+1	9.76E+2
2	4	4.44E+2	4.43E+2	2.02E+3	2.22E+3	5.72E+3	6.61E+3	1.14E+4	1.33E+4	9.54E+1	1.26E+3
2	8	7.33E+2	7.33E+2	3.38E+3	3.71E+3	9.56E+3	1.10E+4	1.90E+4	2.22E+4	1.61E+2	2.12E+3
2	10	9.52E+2	9.51E+2	4.39E+3	4.81E+3	1.24E+4	1.43E+4	2.47E+4	2.89E+4	2.09E+2	2.75E+3
2	20	3.53E+3	3.53E+3	1.63E+4	1.79E+4	4.61E+4	5.32E+4	9.16E+4	1.07E+5	7.77E+2	1.02E+4
2	30	1.31E+4	1.30E+4	6.02E+4	6.60E+4	1.70E+5	1.97E+5	3.39E+5	3.96E+5	2.87E+3	3.77E+4
1-y-old											
1	1	4.23E+1	8.04E+1	3.89E+2	5.34E+2	1.24E+3	1.59E+3	2.52E+3	3.17E+3	9.91E+1	3.65E+2
1	2	5.52E+1	8.34E+1	4.36E+2	5.36E+2	1.35E+3	1.59E+3	2.72E+3	3.17E+3	8.90E+1	3.91E+2
1	4	7.57E+1	9.87E+1	5.24E+2	6.07E+2	1.58E+3	1.78E+3	3.16E+3	3.55E+3	8.56E+1	4.41E+2
1	8	1.16E+2	1.45E+2	7.22E+2	8.19E+2	2.10E+3	2.37E+3	4.14E+3	4.71E+3	8.78E+1	5.42E+2
1	12	1.69E+2	2.07E+2	9.48E+2	1.06E+3	2.66E+3	3.04E+3	5.19E+3	6.01E+3	9.05E+1	6.37E+2
1	24	3.95E+2	4.53E+2	1.59E+3	1.74E+3	4.10E+3	4.79E+3	7.77E+3	9.35E+3	9.75E+1	8.41E+2
2	2	7.00E+2	7.42E+2	2.17E+3	2.32E+3	5.35E+3	6.29E+3	9.99E+3	1.22E+4	1.11E+2	1.03E+3
2	4	8.81E+2	9.22E+2	2.74E+3	2.92E+3	6.75E+3	7.89E+3	1.26E+4	1.53E+4	1.41E+2	1.30E+3
2	8	1.37E+3	1.43E+3	4.34E+3	4.62E+3	1.07E+4	1.25E+4	2.01E+4	2.43E+4	2.27E+2	2.08E+3
2	10	1.73E+3	1.81E+3	5.50E+3	5.86E+3	1.36E+4	1.59E+4	2.55E+4	3.09E+4	2.89E+2	2.65E+3
2	20	5.74E+3	6.01E+3	1.83E+4	1.94E+4	4.52E+4	5.27E+4	8.46E+4	1.03E+5	9.61E+2	8.80E+3
2	30	1.91E+4	2.00E+4	6.07E+4	6.46E+4	1.50E+5	1.75E+5	2.81E+5	3.41E+5	3.19E+3	2.92E+4
5-y-old											
1	1	5.49E+1	1.11E+2	4.27E+2	6.13E+2	1.32E+3	1.75E+3	2.69E+3	3.47E+3	1.72E+2	4.40E+2
1	2	7.42E+1	1.17E+2	4.81E+2	6.12E+2	1.43E+3	1.73E+3	2.87E+3	3.41E+3	1.47E+2	4.64E+2
1	4	1.03E+2	1.39E+2	5.61E+2	6.78E+2	1.62E+3	1.89E+3	3.20E+3	3.71E+3	1.33E+2	5.04E+2
1	8	1.56E+2	2.05E+2	7.60E+2	9.04E+2	2.12E+3	2.47E+3	4.12E+3	4.81E+3	1.27E+2	5.94E+2
1	12	2.33E+2	2.99E+2	1.03E+3	1.19E+3	2.77E+3	3.18E+3	5.29E+3	6.15E+3	1.26E+2	6.86E+2
1	24	6.30E+2	7.19E+2	1.96E+3	2.01E+3	4.73E+3	5.14E+3	8.57E+3	9.80E+3	1.29E+2	8.84E+2
2	2	1.35E+3	1.31E+3	2.90E+3	2.76E+3	6.51E+3	6.85E+3	1.15E+4	1.29E+4	1.42E+2	1.06E+3
2	4	1.69E+3	1.61E+3	3.60E+3	3.40E+3	8.07E+3	8.45E+3	1.42E+4	1.60E+4	1.77E+2	1.32E+3
2	8	2.44E+3	2.34E+3	5.40E+3	5.12E+3	1.22E+4	1.27E+4	2.15E+4	2.41E+4	2.74E+2	2.02E+3
2	10	3.00E+3	2.87E+3	6.66E+3	6.32E+3	1.51E+4	1.57E+4	2.66E+4	2.98E+4	3.40E+2	2.51E+3
2	20	8.72E+3	8.36E+3	1.96E+4	1.86E+4	4.42E+4	4.62E+4	7.82E+4	8.74E+4	1.00E+3	7.40E+3
2	30	2.57E+4	2.47E+4	5.77E+4	5.48E+4	1.31E+5	1.36E+5	2.31E+5	2.58E+5	2.97E+3	2.18E+4
10-y-old											
1	1	7.05E+1	1.45E+2	4.66E+2	6.98E+2	1.40E+3	1.92E+3	2.82E+3	3.75E+3	2.65E+2	5.48E+2
1	2	9.83E+1	1.55E+2	5.36E+2	7.03E+2	1.53E+3	1.90E+3	3.03E+3	3.69E+3	2.06E+2	5.67E+2
1	4	1.41E+2	1.86E+2	6.34E+2	7.91E+2	1.74E+3	2.10E+3	3.38E+3	4.03E+3	1.68E+2	5.99E+2
1	8	2.19E+2	2.81E+2	8.65E+2	1.08E+3	2.27E+3	2.79E+3	4.32E+3	5.30E+3	1.42E+2	6.72E+2
1	12	3.31E+2	4.23E+2	1.18E+3	1.46E+3	2.95E+3	3.65E+3	5.51E+3	6.86E+3	1.31E+2	7.42E+2
1	24	9.61E+2	1.17E+3	2.28E+3	2.68E+3	4.97E+3	6.19E+3	8.77E+3	1.13E+4	1.23E+2	8.83E+2
2	2	2.37E+3	2.62E+3	3.43E+3	3.86E+3	6.79E+3	8.46E+3	1.16E+4	1.51E+4	1.32E+2	1.02E+3
2	4	3.03E+3	3.26E+3	4.22E+3	4.72E+3	8.30E+3	1.03E+4	1.41E+4	1.84E+4	1.60E+2	1.24E+3
2	8	4.12E+3	4.40E+3	6.03E+3	6.72E+3	1.19E+4	1.47E+4	2.03E+4	2.64E+4	2.35E+2	1.80E+3
2	10	4.85E+3	5.17E+3	7.22E+3	8.04E+3	1.43E+4	1.76E+4	2.44E+4	3.16E+4	2.84E+2	2.18E+3
2	20	1.17E+4	1.25E+4	1.83E+4	2.02E+4	3.64E+4	4.46E+4	6.23E+4	8.00E+4	7.37E+2	5.63E+3
2	30	2.97E+4	3.15E+4	4.69E+4	5.19E+4	9.37E+4	1.15E+5	1.60E+5	2.05E+5	1.91E+3	1.46E+4

Table A-25 (continued)

Time post intake		Distance from body/aspect									
		2 in		1 ft		2 ft		3 ft		Thyroid: anterior	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	2 in	1 ft
15-y-old											
	1	9.86E+1	2.04E+2	5.29E+2	8.31E+2	1.52E+3	2.18E+3	3.02E+3	4.17E+3	4.24E+2	7.30E+2
	2	1.40E+2	2.20E+2	6.19E+2	8.43E+2	1.68E+3	2.17E+3	3.27E+3	4.10E+3	2.93E+2	7.29E+2
	4	2.05E+2	2.67E+2	7.47E+2	9.62E+2	1.93E+3	2.41E+3	3.66E+3	4.51E+3	2.10E+2	7.41E+2
	8	3.24E+2	4.11E+2	1.04E+3	1.35E+3	2.55E+3	3.27E+3	4.72E+3	6.04E+3	1.58E+2	7.85E+2
	12	4.98E+2	6.31E+2	1.44E+3	1.88E+3	3.36E+3	4.39E+3	6.06E+3	7.96E+3	1.38E+2	8.30E+2
1	24	1.55E+3	1.94E+3	2.92E+3	3.80E+3	5.87E+3	7.91E+3	9.86E+3	1.37E+4	1.23E+2	9.22E+2
2		4.41E+3	5.31E+3	4.59E+3	5.91E+3	8.20E+3	1.13E+4	1.32E+4	1.90E+4	1.29E+2	1.04E+3
4		5.72E+3	6.71E+3	5.67E+3	7.25E+3	1.00E+4	1.38E+4	1.61E+4	2.31E+4	1.56E+2	1.25E+3
8		7.58E+3	8.72E+3	8.04E+3	1.02E+4	1.43E+4	1.95E+4	2.31E+4	3.28E+4	2.28E+2	1.83E+3
10		8.84E+3	1.01E+4	9.61E+3	1.21E+4	1.72E+4	2.33E+4	2.76E+4	3.92E+4	2.76E+2	2.20E+3
20		2.06E+4	2.32E+4	2.39E+4	2.99E+4	4.30E+4	5.77E+4	6.95E+4	9.75E+4	7.08E+2	5.63E+3
30		5.09E+4	5.70E+4	6.04E+4	7.53E+4	1.09E+5	1.46E+5	1.76E+5	2.47E+5	1.81E+3	1.44E+4
Adult male											
	1	1.36E+2	2.04E+2	6.85E+2	8.44E+2	1.85E+3	2.20E+3	3.57E+3	4.20E+3	2.07E+2	6.77E+2
	2	1.91E+2	2.22E+2	7.89E+2	8.53E+2	2.00E+3	2.17E+3	3.78E+3	4.13E+3	1.63E+2	7.06E+2
	4	2.72E+2	2.68E+2	9.10E+2	9.62E+2	2.21E+3	2.40E+3	4.11E+3	4.53E+3	1.24E+2	7.40E+2
	8	3.88E+2	3.98E+2	1.12E+3	1.33E+3	2.68E+3	3.25E+3	5.00E+3	6.08E+3	9.42E+1	8.01E+2
	12	5.15E+2	5.82E+2	1.34E+3	1.82E+3	3.22E+3	4.36E+3	6.03E+3	8.12E+3	8.27E+1	8.59E+2
1	24	8.95E+2	1.40E+3	1.85E+3	3.51E+3	4.48E+3	7.94E+3	8.48E+3	1.45E+4	7.40E+1	9.74E+2
2		1.24E+3	2.59E+3	2.27E+3	5.24E+3	5.51E+3	1.14E+4	1.05E+4	2.06E+4	7.80E+1	1.10E+3
4		1.52E+3	3.21E+3	2.76E+3	6.41E+3	6.69E+3	1.39E+4	1.27E+4	2.51E+4	9.40E+1	1.33E+3
8		2.17E+3	4.42E+3	3.97E+3	9.01E+3	9.62E+3	1.95E+4	1.83E+4	3.53E+4	1.37E+2	1.93E+3
10		2.60E+3	5.21E+3	4.77E+3	1.07E+4	1.15E+4	2.32E+4	2.19E+4	4.20E+4	1.65E+2	2.32E+3
20		6.43E+3	1.22E+4	1.19E+4	2.58E+4	2.87E+4	5.60E+4	5.44E+4	1.01E+5	4.20E+2	5.85E+3
30		1.60E+4	2.95E+4	2.98E+4	6.33E+4	7.20E+4	1.38E+5	1.36E+5	2.50E+5	1.07E+3	1.48E+4
Adult female											
	1	1.23E+2	1.64E+2	6.18E+2	7.28E+2	1.70E+3	1.95E+3	3.31E+3	3.77E+3	2.10E+2	6.60E+2
	2	1.64E+2	1.87E+2	6.88E+2	7.65E+2	1.80E+3	2.00E+3	3.44E+3	3.83E+3	1.56E+2	7.17E+2
	4	2.23E+2	2.33E+2	7.73E+2	8.84E+2	1.95E+3	2.27E+3	3.70E+3	4.30E+3	1.15E+2	7.71E+2
	8	3.23E+2	3.49E+2	9.53E+2	1.22E+3	2.38E+3	3.08E+3	4.52E+3	5.81E+3	8.64E+1	8.37E+2
	12	4.41E+2	5.12E+2	1.16E+3	1.66E+3	2.89E+3	4.11E+3	5.51E+3	7.73E+3	7.55E+1	8.92E+2
1	24	8.34E+2	1.24E+3	1.65E+3	3.08E+3	4.13E+3	7.33E+3	7.94E+3	1.37E+4	6.73E+1	1.00E+3
2		1.23E+3	2.32E+3	2.06E+3	4.48E+3	5.15E+3	1.04E+4	9.92E+3	1.92E+4	7.09E+1	1.13E+3
4		1.51E+3	2.87E+3	2.50E+3	5.47E+3	6.26E+3	1.26E+4	1.20E+4	2.34E+4	8.54E+1	1.37E+3
8		2.15E+3	3.97E+3	3.60E+3	7.72E+3	8.99E+3	1.78E+4	1.73E+4	3.29E+4	1.24E+2	1.98E+3
10		2.56E+3	4.68E+3	4.32E+3	9.18E+3	1.08E+4	2.12E+4	2.07E+4	3.92E+4	1.50E+2	2.38E+3
20		6.30E+3	1.10E+4	1.08E+4	2.22E+4	2.68E+4	5.13E+4	5.14E+4	9.47E+4	3.82E+2	6.02E+3
30		1.57E+4	2.66E+4	2.71E+4	5.46E+4	6.72E+4	1.26E+5	1.29E+5	2.33E+5	9.67E+2	1.52E+4

Table A-26. Inhaled Activity of Type F ¹³⁷Cs vs. Exposure Rate (Bq per μR/h)

Time post intake		Distance from chest/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	3.81E+1	7.67E+1	3.68E+2	5.80E+2	1.28E+3	1.80E+3	2.70E+3	3.68E+3
	2	3.98E+1	7.61E+1	3.80E+2	5.78E+2	1.31E+3	1.79E+3	2.77E+3	3.67E+3
	4	4.29E+1	7.82E+1	4.00E+2	5.85E+2	1.37E+3	1.81E+3	2.88E+3	3.72E+3
	8	4.87E+1	8.35E+1	4.34E+2	6.05E+2	1.46E+3	1.87E+3	3.07E+3	3.83E+3
	12	5.43E+1	8.80E+1	4.67E+2	6.24E+2	1.56E+3	1.92E+3	3.25E+3	3.95E+3
1	24	6.96E+1	9.71E+1	5.56E+2	6.73E+2	1.81E+3	2.07E+3	3.75E+3	4.26E+3
2		9.25E+1	1.07E+2	6.90E+2	7.43E+2	2.18E+3	2.29E+3	4.48E+3	4.72E+3
4		1.17E+2	1.19E+2	8.33E+2	8.36E+2	2.58E+3	2.58E+3	5.28E+3	5.33E+3
8		1.42E+2	1.43E+2	1.01E+3	1.00E+3	3.12E+3	3.09E+3	6.37E+3	6.38E+3
10		1.56E+2	1.56E+2	1.10E+3	1.09E+3	3.41E+3	3.37E+3	6.96E+3	6.97E+3
20		2.41E+2	2.42E+2	1.71E+3	1.69E+3	5.29E+3	5.23E+3	1.08E+4	1.08E+4
30		3.76E+2	3.77E+2	2.66E+3	2.64E+3	8.23E+3	8.15E+3	1.68E+4	1.68E+4
1-y-old									
	1	6.23E+1	1.29E+2	4.08E+2	7.34E+2	1.35E+3	2.13E+3	2.83E+3	4.27E+3
	2	6.49E+1	1.28E+2	4.24E+2	7.29E+2	1.39E+3	2.12E+3	2.91E+3	4.24E+3
	4	7.03E+1	1.31E+2	4.50E+2	7.37E+2	1.46E+3	2.13E+3	3.04E+3	4.26E+3
	8	8.08E+1	1.41E+2	4.95E+2	7.63E+2	1.58E+3	2.18E+3	3.26E+3	4.36E+3
	12	9.10E+1	1.50E+2	5.39E+2	7.86E+2	1.69E+3	2.24E+3	3.48E+3	4.46E+3
1	24	1.18E+2	1.67E+2	6.59E+2	8.46E+2	2.00E+3	2.39E+3	4.06E+3	4.76E+3
2		1.58E+2	1.84E+2	8.45E+2	9.33E+2	2.47E+3	2.64E+3	4.94E+3	5.26E+3
4		2.02E+2	2.08E+2	1.06E+3	1.06E+3	3.01E+3	3.01E+3	5.98E+3	6.00E+3
8		2.56E+2	2.59E+2	1.34E+3	1.32E+3	3.80E+3	3.74E+3	7.51E+3	7.46E+3
10		2.85E+2	2.88E+2	1.49E+3	1.47E+3	4.22E+3	4.17E+3	8.36E+3	8.30E+3
20		4.86E+2	4.91E+2	2.54E+3	2.50E+3	7.20E+3	7.10E+3	1.43E+4	1.42E+4
30		8.28E+2	8.36E+2	4.33E+3	4.27E+3	1.23E+4	1.21E+4	2.43E+4	2.41E+4
5-y-old									
	1	1.05E+2	2.06E+2	5.38E+2	9.90E+2	1.69E+3	2.74E+3	3.49E+3	5.40E+3
	2	1.10E+2	2.05E+2	5.62E+2	9.87E+2	1.75E+3	2.72E+3	3.59E+3	5.36E+3
	4	1.19E+2	2.14E+2	6.01E+2	1.01E+3	1.84E+3	2.75E+3	3.76E+3	5.39E+3
	8	1.39E+2	2.35E+2	6.68E+2	1.06E+3	2.00E+3	2.83E+3	4.04E+3	5.52E+3
	12	1.58E+2	2.52E+2	7.33E+2	1.10E+3	2.15E+3	2.91E+3	4.31E+3	5.65E+3
1	24	2.07E+2	2.86E+2	9.09E+2	1.19E+3	2.55E+3	3.11E+3	5.04E+3	6.00E+3
2		2.74E+2	3.16E+2	1.17E+3	1.31E+3	3.15E+3	3.40E+3	6.10E+3	6.55E+3
4		3.41E+2	3.52E+2	1.46E+3	1.47E+3	3.80E+3	3.81E+3	7.27E+3	7.34E+3
8		4.14E+2	4.20E+2	1.78E+3	1.75E+3	4.60E+3	4.55E+3	8.78E+3	8.77E+3
10		4.51E+2	4.57E+2	1.93E+3	1.91E+3	5.00E+3	4.94E+3	9.54E+3	9.53E+3
20		6.58E+2	6.67E+2	2.82E+3	2.78E+3	7.31E+3	7.23E+3	1.40E+4	1.39E+4
30		9.15E+2	9.27E+2	3.92E+3	3.87E+3	1.02E+4	1.00E+4	1.94E+4	1.94E+4
10-y-old									
	1	1.41E+2	2.78E+2	6.01E+2	1.14E+3	1.78E+3	2.98E+3	3.63E+3	5.77E+3
	2	1.46E+2	2.76E+2	6.31E+2	1.14E+3	1.85E+3	2.97E+3	3.75E+3	5.73E+3
	4	1.59E+2	2.89E+2	6.79E+2	1.17E+3	1.96E+3	3.02E+3	3.94E+3	5.78E+3
	8	1.87E+2	3.20E+2	7.65E+2	1.25E+3	2.16E+3	3.14E+3	4.27E+3	5.95E+3
	12	2.14E+2	3.47E+2	8.47E+2	1.31E+3	2.34E+3	3.25E+3	4.58E+3	6.12E+3
1	24	2.86E+2	3.98E+2	1.07E+3	1.45E+3	2.82E+3	3.51E+3	5.40E+3	6.54E+3
2		3.82E+2	4.42E+2	1.41E+3	1.60E+3	3.52E+3	3.85E+3	6.60E+3	7.15E+3
4		4.72E+2	4.89E+2	1.76E+3	1.78E+3	4.25E+3	4.28E+3	7.84E+3	7.95E+3
8		5.56E+2	5.64E+2	2.08E+3	2.06E+3	4.98E+3	4.94E+3	9.17E+3	9.18E+3
10		5.90E+2	5.99E+2	2.21E+3	2.19E+3	5.30E+3	5.25E+3	9.74E+3	9.75E+3
20		7.45E+2	7.56E+2	2.79E+3	2.76E+3	6.70E+3	6.64E+3	1.23E+4	1.23E+4
30		8.86E+2	8.98E+2	3.32E+3	3.29E+3	7.97E+3	7.90E+3	1.47E+4	1.47E+4

Table A-26 (continued)

Time post intake		Distance from chest/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
15-y-old									
	1	2.21E+2	4.33E+2	8.27E+2	1.50E+3	2.27E+3	3.72E+3	4.49E+3	7.03E+3
	2	2.29E+2	4.29E+2	8.68E+2	1.51E+3	2.36E+3	3.71E+3	4.65E+3	6.99E+3
	4	2.50E+2	4.47E+2	9.36E+2	1.56E+3	2.51E+3	3.78E+3	4.89E+3	7.06E+3
	8	2.96E+2	4.93E+2	1.06E+3	1.67E+3	2.76E+3	3.95E+3	5.31E+3	7.27E+3
	12	3.40E+2	5.31E+2	1.17E+3	1.76E+3	3.00E+3	4.09E+3	5.69E+3	7.47E+3
1	24	4.53E+2	6.02E+2	1.48E+3	1.95E+3	3.61E+3	4.42E+3	6.68E+3	7.96E+3
2		5.91E+2	6.59E+2	1.91E+3	2.14E+3	4.45E+3	4.82E+3	8.04E+3	8.63E+3
4		7.01E+2	7.09E+2	2.30E+3	2.32E+3	5.20E+3	5.23E+3	9.27E+3	9.36E+3
8		7.64E+2	7.59E+2	2.51E+3	2.49E+3	5.67E+3	5.62E+3	1.01E+4	1.01E+4
10		7.82E+2	7.76E+2	2.57E+3	2.55E+3	5.80E+3	5.75E+3	1.03E+4	1.03E+4
20		8.49E+2	8.43E+2	2.80E+3	2.77E+3	6.31E+3	6.25E+3	1.12E+4	1.12E+4
30		9.16E+2	9.10E+2	3.02E+3	2.99E+3	6.80E+3	6.74E+3	1.21E+4	1.21E+4
Adult male									
	1	2.58E+2	4.39E+2	8.65E+2	1.54E+3	2.32E+3	3.70E+3	4.54E+3	6.26E+3
	2	2.78E+2	4.46E+2	9.14E+2	1.55E+3	2.42E+3	3.70E+3	4.69E+3	6.28E+3
	4	3.12E+2	4.74E+2	9.87E+2	1.60E+3	2.57E+3	3.77E+3	4.93E+3	6.39E+3
	8	3.73E+2	5.27E+2	1.11E+3	1.70E+3	2.82E+3	3.92E+3	5.33E+3	6.62E+3
	12	4.30E+2	5.69E+2	1.22E+3	1.78E+3	3.05E+3	4.06E+3	5.71E+3	6.83E+3
1	24	5.63E+2	6.44E+2	1.52E+3	1.95E+3	3.66E+3	4.35E+3	6.69E+3	7.32E+3
2		6.95E+2	6.95E+2	1.93E+3	2.11E+3	4.50E+3	4.70E+3	8.01E+3	7.95E+3
4		7.85E+2	7.34E+2	2.27E+3	2.25E+3	5.20E+3	5.03E+3	9.14E+3	8.55E+3
8		8.38E+2	7.75E+2	2.45E+3	2.38E+3	5.58E+3	5.33E+3	9.78E+3	9.06E+3
10		8.53E+2	7.89E+2	2.49E+3	2.43E+3	5.68E+3	5.42E+3	9.96E+3	9.22E+3
20		9.14E+2	8.45E+2	2.67E+3	2.60E+3	6.09E+3	5.81E+3	1.07E+4	9.87E+3
30		9.74E+2	9.01E+2	2.84E+3	2.77E+3	6.49E+3	6.19E+3	1.14E+4	1.05E+4
Adult female									
	1	2.26E+2	3.44E+2	8.04E+2	1.36E+3	2.22E+3	3.33E+3	4.40E+3	6.93E+3
	2	2.39E+2	3.53E+2	8.45E+2	1.39E+3	2.30E+3	3.36E+3	4.53E+3	6.89E+3
	4	2.65E+2	3.81E+2	9.13E+2	1.45E+3	2.44E+3	3.45E+3	4.75E+3	6.96E+3
	8	3.14E+2	4.34E+2	1.03E+3	1.56E+3	2.68E+3	3.62E+3	5.15E+3	7.16E+3
	12	3.62E+2	4.79E+2	1.15E+3	1.64E+3	2.91E+3	3.76E+3	5.51E+3	7.35E+3
1	24	4.83E+2	5.62E+2	1.45E+3	1.82E+3	3.50E+3	4.08E+3	6.45E+3	7.80E+3
2		6.30E+2	6.17E+2	1.88E+3	1.98E+3	4.29E+3	4.44E+3	7.72E+3	8.39E+3
4		7.42E+2	6.55E+2	2.25E+3	2.12E+3	4.97E+3	4.78E+3	8.80E+3	8.99E+3
8		7.98E+2	6.92E+2	2.43E+3	2.24E+3	5.33E+3	5.06E+3	9.41E+3	9.51E+3
10		8.13E+2	7.05E+2	2.48E+3	2.28E+3	5.43E+3	5.15E+3	9.58E+3	9.68E+3
20		8.70E+2	7.55E+2	2.65E+3	2.44E+3	5.81E+3	5.52E+3	1.03E+4	1.04E+4
30		9.28E+2	8.04E+2	2.83E+3	2.60E+3	6.20E+3	5.88E+3	1.09E+4	1.11E+4

Table A-27. Ingested Activity of ¹³⁷Cs vs. Exposure Rate (Bq per μR/h)

Time post intake		Distance from abdomen/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	2.02E+1	3.27E+1	2.38E+2	2.89E+2	7.92E+2	9.17E+2	1.65E+3	1.89E+3
	2	2.44E+1	3.21E+1	2.51E+2	2.79E+2	8.20E+2	8.87E+2	1.70E+3	1.84E+3
	4	2.83E+1	3.26E+1	2.61E+2	2.75E+2	8.40E+2	8.71E+2	1.73E+3	1.80E+3
	8	3.13E+1	3.41E+1	2.68E+2	2.75E+2	8.53E+2	8.68E+2	1.76E+3	1.80E+3
	12	3.32E+1	3.53E+1	2.73E+2	2.77E+2	8.62E+2	8.70E+2	1.77E+3	1.80E+3
1	24	3.64E+1	3.73E+1	2.83E+2	2.82E+2	8.85E+2	8.82E+2	1.81E+3	1.83E+3
2		3.89E+1	3.94E+1	2.96E+2	2.94E+2	9.24E+2	9.18E+2	1.89E+3	1.90E+3
4		4.24E+1	4.29E+1	3.23E+2	3.21E+2	1.01E+3	1.00E+3	2.06E+3	2.07E+3
8		5.05E+1	5.11E+1	3.84E+2	3.82E+2	1.20E+3	1.19E+3	2.46E+3	2.47E+3
10		5.51E+1	5.58E+1	4.20E+2	4.17E+2	1.31E+3	1.30E+3	2.68E+3	2.69E+3
20		8.55E+1	8.66E+1	6.51E+2	6.46E+2	2.03E+3	2.02E+3	4.16E+3	4.17E+3
30		1.33E+2	1.35E+2	1.01E+3	1.01E+3	3.16E+3	3.14E+3	6.48E+3	6.50E+3
1-y-old									
	1	2.88E+1	5.26E+1	2.70E+2	3.55E+2	8.69E+2	1.07E+3	1.79E+3	2.16E+3
	2	3.62E+1	5.19E+1	2.91E+2	3.41E+2	9.11E+2	1.02E+3	1.86E+3	2.07E+3
	4	4.39E+1	5.29E+1	3.10E+2	3.35E+2	9.44E+2	9.97E+2	1.91E+3	2.02E+3
	8	4.97E+1	5.59E+1	3.24E+2	3.37E+2	9.67E+2	9.93E+2	1.94E+3	2.00E+3
	12	5.36E+1	5.83E+1	3.33E+2	3.41E+2	9.83E+2	9.95E+2	1.97E+3	2.01E+3
1	24	6.02E+1	6.24E+1	3.50E+2	3.50E+2	1.02E+3	1.01E+3	2.03E+3	2.04E+3
2		6.54E+1	6.66E+1	3.72E+2	3.68E+2	1.07E+3	1.06E+3	2.14E+3	2.14E+3
4		7.27E+1	7.41E+1	4.13E+2	4.09E+2	1.19E+3	1.18E+3	2.38E+3	2.37E+3
8		9.00E+1	9.17E+1	5.11E+2	5.06E+2	1.48E+3	1.46E+3	2.94E+3	2.94E+3
10		1.00E+2	1.02E+2	5.68E+2	5.62E+2	1.64E+3	1.62E+3	3.28E+3	3.27E+3
20		1.71E+2	1.74E+2	9.69E+2	9.59E+2	2.80E+3	2.77E+3	5.58E+3	5.57E+3
30		2.91E+2	2.96E+2	1.65E+3	1.63E+3	4.77E+3	4.72E+3	9.52E+3	9.49E+3
5-y-old									
	1	3.76E+1	7.26E+1	2.98E+2	4.08E+2	9.32E+2	1.18E+3	1.90E+3	2.36E+3
	2	4.93E+1	7.30E+1	3.31E+2	3.94E+2	9.92E+2	1.12E+3	1.99E+3	2.25E+3
	4	6.21E+1	7.56E+1	3.59E+2	3.91E+2	1.04E+3	1.10E+3	2.06E+3	2.19E+3
	8	7.18E+1	8.08E+1	3.79E+2	3.97E+2	1.07E+3	1.10E+3	2.10E+3	2.18E+3
	12	7.81E+1	8.47E+1	3.92E+2	4.03E+2	1.09E+3	1.10E+3	2.13E+3	2.18E+3
1	24	8.90E+1	9.15E+1	4.16E+2	4.16E+2	1.13E+3	1.13E+3	2.20E+3	2.21E+3
2		9.66E+1	9.75E+1	4.39E+2	4.37E+2	1.18E+3	1.18E+3	2.30E+3	2.30E+3
4		1.06E+2	1.07E+2	4.81E+2	4.78E+2	1.30E+3	1.29E+3	2.52E+3	2.52E+3
8		1.26E+2	1.27E+2	5.72E+2	5.68E+2	1.54E+3	1.53E+3	3.00E+3	3.00E+3
10		1.37E+2	1.38E+2	6.22E+2	6.18E+2	1.68E+3	1.66E+3	3.26E+3	3.26E+3
20		2.00E+2	2.02E+2	9.10E+2	9.03E+2	2.45E+3	2.43E+3	4.76E+3	4.76E+3
30		2.79E+2	2.81E+2	1.27E+3	1.26E+3	3.41E+3	3.38E+3	6.62E+3	6.62E+3
10-y-old									
	1	4.80E+1	9.42E+1	3.26E+2	4.61E+2	9.88E+2	1.28E+3	2.00E+3	2.53E+3
	2	6.48E+1	9.59E+1	3.70E+2	4.49E+2	1.07E+3	1.23E+3	2.12E+3	2.41E+3
	4	8.36E+1	1.00E+2	4.10E+2	4.49E+2	1.13E+3	1.21E+3	2.20E+3	2.35E+3
	8	9.77E+1	1.08E+2	4.39E+2	4.61E+2	1.17E+3	1.21E+3	2.26E+3	2.34E+3
	12	1.07E+2	1.15E+2	4.57E+2	4.71E+2	1.20E+3	1.22E+3	2.29E+3	2.35E+3
1	24	1.23E+2	1.25E+2	4.89E+2	4.91E+2	1.25E+3	1.25E+3	2.36E+3	2.38E+3
2		1.33E+2	1.34E+2	5.18E+2	5.15E+2	1.31E+3	1.30E+3	2.47E+3	2.48E+3
4		1.45E+2	1.45E+2	5.62E+2	5.58E+2	1.42E+3	1.41E+3	2.68E+3	2.69E+3
8		1.67E+2	1.67E+2	6.46E+2	6.42E+2	1.63E+3	1.62E+3	3.08E+3	3.09E+3
10		1.77E+2	1.77E+2	6.86E+2	6.82E+2	1.73E+3	1.72E+3	3.27E+3	3.28E+3
20		2.24E+2	2.24E+2	8.69E+2	8.62E+2	2.19E+3	2.18E+3	4.14E+3	4.15E+3
30		2.66E+2	2.66E+2	1.03E+3	1.03E+3	2.61E+3	2.59E+3	4.93E+3	4.94E+3

Table A-27 (continued)

Time post intake		Distance from abdomen/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
15-y-old									
	1	6.66E+1	1.31E+2	3.69E+2	5.44E+2	1.07E+3	1.44E+3	2.13E+3	2.79E+3
	2	9.10E+1	1.34E+2	4.26E+2	5.31E+2	1.17E+3	1.38E+3	2.27E+3	2.65E+3
	4	1.18E+2	1.41E+2	4.78E+2	5.33E+2	1.25E+3	1.35E+3	2.38E+3	2.58E+3
	8	1.38E+2	1.52E+2	5.17E+2	5.49E+2	1.30E+3	1.36E+3	2.46E+3	2.57E+3
	12	1.50E+2	1.60E+2	5.42E+2	5.63E+2	1.34E+3	1.38E+3	2.50E+3	2.58E+3
1	24	1.72E+2	1.74E+2	5.85E+2	5.87E+2	1.40E+3	1.41E+3	2.59E+3	2.62E+3
2		1.85E+2	1.85E+2	6.18E+2	6.14E+2	1.47E+3	1.46E+3	2.70E+3	2.71E+3
4		1.97E+2	1.96E+2	6.56E+2	6.51E+2	1.56E+3	1.55E+3	2.86E+3	2.87E+3
8		2.11E+2	2.10E+2	7.04E+2	6.98E+2	1.67E+3	1.66E+3	3.07E+3	3.08E+3
10		2.16E+2	2.15E+2	7.20E+2	7.14E+2	1.71E+3	1.70E+3	3.14E+3	3.15E+3
20		2.35E+2	2.33E+2	7.83E+2	7.76E+2	1.86E+3	1.85E+3	3.42E+3	3.43E+3
30		2.53E+2	2.51E+2	8.44E+2	8.37E+2	2.01E+3	1.99E+3	3.68E+3	3.69E+3
Adult male									
	1	9.14E+1	1.33E+2	4.72E+2	5.57E+2	1.29E+3	1.47E+3	2.48E+3	2.56E+3
	2	1.24E+2	1.39E+2	5.42E+2	5.47E+2	1.39E+3	1.41E+3	2.62E+3	2.50E+3
	4	1.62E+2	1.49E+2	6.07E+2	5.52E+2	1.48E+3	1.39E+3	2.72E+3	2.48E+3
	8	1.92E+2	1.65E+2	6.58E+2	5.74E+2	1.54E+3	1.40E+3	2.79E+3	2.49E+3
	12	2.13E+2	1.78E+2	6.91E+2	5.92E+2	1.58E+3	1.42E+3	2.83E+3	2.50E+3
1	24	2.48E+2	1.99E+2	7.46E+2	6.21E+2	1.65E+3	1.45E+3	2.92E+3	2.55E+3
2		2.68E+2	2.12E+2	7.85E+2	6.48E+2	1.72E+3	1.50E+3	3.03E+3	2.63E+3
4		2.82E+2	2.23E+2	8.24E+2	6.79E+2	1.81E+3	1.58E+3	3.17E+3	2.76E+3
8		2.98E+2	2.35E+2	8.69E+2	7.17E+2	1.91E+3	1.66E+3	3.35E+3	2.91E+3
10		3.03E+2	2.39E+2	8.85E+2	7.29E+2	1.94E+3	1.69E+3	3.41E+3	2.96E+3
20		3.25E+2	2.56E+2	9.48E+2	7.81E+2	2.08E+3	1.81E+3	3.65E+3	3.17E+3
30		3.46E+2	2.73E+2	1.01E+3	8.33E+2	2.21E+3	1.93E+3	3.89E+3	3.38E+3
Adult female									
	1	8.34E+1	1.08E+2	4.28E+2	4.88E+2	1.19E+3	1.31E+3	2.31E+3	2.83E+3
	2	1.08E+2	1.19E+2	4.80E+2	4.94E+2	1.26E+3	1.29E+3	2.40E+3	2.69E+3
	4	1.37E+2	1.32E+2	5.30E+2	5.09E+2	1.33E+3	1.30E+3	2.48E+3	2.63E+3
	8	1.63E+2	1.48E+2	5.77E+2	5.34E+2	1.39E+3	1.32E+3	2.55E+3	2.62E+3
	12	1.82E+2	1.60E+2	6.09E+2	5.52E+2	1.43E+3	1.34E+3	2.60E+3	2.63E+3
1	24	2.14E+2	1.80E+2	6.61E+2	5.82E+2	1.50E+3	1.38E+3	2.69E+3	2.67E+3
2		2.33E+2	1.93E+2	6.97E+2	6.08E+2	1.56E+3	1.43E+3	2.80E+3	2.75E+3
4		2.45E+2	2.02E+2	7.32E+2	6.38E+2	1.64E+3	1.50E+3	2.93E+3	2.88E+3
8		2.59E+2	2.14E+2	7.73E+2	6.73E+2	1.73E+3	1.58E+3	3.09E+3	3.04E+3
10		2.63E+2	2.17E+2	7.86E+2	6.85E+2	1.76E+3	1.61E+3	3.15E+3	3.09E+3
20		2.82E+2	2.33E+2	8.42E+2	7.34E+2	1.89E+3	1.72E+3	3.37E+3	3.31E+3
30		3.01E+2	2.48E+2	8.98E+2	7.82E+2	2.01E+3	1.84E+3	3.59E+3	3.53E+3

Table A-28. Inhaled Activity of Type F ¹⁹²Ir vs. Exposure Rate (Bq per μR/h)

Time post intake		Distance from chest/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	2.76E+1	5.90E+1	2.51E+2	4.13E+2	8.53E+2	1.26E+3	1.79E+3	2.55E+3
	2	2.94E+1	6.13E+1	2.59E+2	4.17E+2	8.76E+2	1.27E+3	1.84E+3	2.57E+3
	4	3.19E+1	6.48E+1	2.72E+2	4.29E+2	9.15E+2	1.30E+3	1.92E+3	2.64E+3
	8	3.62E+1	7.08E+1	2.98E+2	4.55E+2	9.93E+2	1.38E+3	2.07E+3	2.79E+3
	12	4.08E+1	7.63E+1	3.26E+2	4.81E+2	1.08E+3	1.45E+3	2.24E+3	2.94E+3
1	24	5.59E+1	9.09E+1	4.22E+2	5.65E+2	1.37E+3	1.71E+3	2.83E+3	3.46E+3
2		8.70E+1	1.14E+2	6.39E+2	7.48E+2	2.02E+3	2.28E+3	4.15E+3	4.63E+3
4		1.25E+2	1.38E+2	9.38E+2	9.80E+2	2.93E+3	3.02E+3	5.97E+3	6.17E+3
8		1.47E+2	1.56E+2	1.11E+3	1.13E+3	3.45E+3	3.50E+3	7.03E+3	7.16E+3
10		1.54E+2	1.63E+2	1.16E+3	1.18E+3	3.61E+3	3.66E+3	7.36E+3	7.49E+3
20		1.86E+2	1.97E+2	1.41E+3	1.43E+3	4.38E+3	4.43E+3	8.92E+3	9.07E+3
30		2.17E+2	2.30E+2	1.65E+3	1.68E+3	5.12E+3	5.18E+3	1.04E+4	1.06E+4
1-y-old									
	1	4.59E+1	1.02E+2	2.79E+2	5.32E+2	9.07E+2	1.52E+3	1.88E+3	3.00E+3
	2	4.94E+1	1.08E+2	2.90E+2	5.37E+2	9.36E+2	1.53E+3	1.93E+3	3.01E+3
	4	5.41E+1	1.15E+2	3.07E+2	5.53E+2	9.82E+2	1.56E+3	2.02E+3	3.08E+3
	8	6.22E+1	1.26E+2	3.39E+2	5.86E+2	1.07E+3	1.64E+3	2.19E+3	3.23E+3
	12	7.07E+1	1.37E+2	3.74E+2	6.19E+2	1.17E+3	1.73E+3	2.38E+3	3.39E+3
1	24	9.77E+1	1.62E+2	4.93E+2	7.21E+2	1.50E+3	2.00E+3	3.03E+3	3.93E+3
2		1.50E+2	1.97E+2	7.62E+2	9.33E+2	2.25E+3	2.62E+3	4.50E+3	5.16E+3
4		2.10E+2	2.31E+2	1.13E+3	1.19E+3	3.28E+3	3.42E+3	6.52E+3	6.76E+3
8		2.44E+2	2.60E+2	1.34E+3	1.37E+3	3.88E+3	3.94E+3	7.69E+3	7.81E+3
10		2.55E+2	2.71E+2	1.40E+3	1.43E+3	4.06E+3	4.12E+3	8.06E+3	8.17E+3
20		3.08E+2	3.28E+2	1.70E+3	1.74E+3	4.92E+3	4.99E+3	9.76E+3	9.89E+3
30		3.60E+2	3.83E+2	1.99E+3	2.03E+3	5.75E+3	5.84E+3	1.14E+4	1.16E+4
5-y-old									
	1	7.82E+1	1.66E+2	3.68E+2	7.23E+2	1.13E+3	1.96E+3	2.33E+3	3.81E+3
	2	8.45E+1	1.76E+2	3.84E+2	7.33E+2	1.17E+3	1.97E+3	2.39E+3	3.82E+3
	4	9.34E+1	1.90E+2	4.08E+2	7.58E+2	1.23E+3	2.02E+3	2.50E+3	3.90E+3
	8	1.09E+2	2.14E+2	4.53E+2	8.09E+2	1.34E+3	2.13E+3	2.72E+3	4.10E+3
	12	1.25E+2	2.35E+2	5.03E+2	8.58E+2	1.47E+3	2.24E+3	2.96E+3	4.30E+3
1	24	1.75E+2	2.83E+2	6.69E+2	1.00E+3	1.89E+3	2.59E+3	3.76E+3	4.95E+3
2		2.62E+2	3.40E+2	1.03E+3	1.27E+3	2.82E+3	3.32E+3	5.52E+3	6.36E+3
4		3.54E+2	3.89E+2	1.50E+3	1.59E+3	4.05E+3	4.23E+3	7.86E+3	8.14E+3
8		4.09E+2	4.34E+2	1.77E+3	1.82E+3	4.76E+3	4.86E+3	9.23E+3	9.36E+3
10		4.28E+2	4.54E+2	1.86E+3	1.90E+3	4.99E+3	5.08E+3	9.67E+3	9.79E+3
20		5.17E+2	5.48E+2	2.25E+3	2.30E+3	6.04E+3	6.15E+3	1.17E+4	1.19E+4
30		6.04E+2	6.41E+2	2.63E+3	2.69E+3	7.07E+3	7.19E+3	1.37E+4	1.39E+4
10-y-old									
	1	1.06E+2	2.29E+2	4.13E+2	8.40E+2	1.20E+3	2.15E+3	2.42E+3	4.10E+3
	2	1.15E+2	2.46E+2	4.34E+2	8.56E+2	1.24E+3	2.17E+3	2.50E+3	4.11E+3
	4	1.28E+2	2.67E+2	4.64E+2	8.91E+2	1.31E+3	2.23E+3	2.62E+3	4.21E+3
	8	1.51E+2	3.03E+2	5.19E+2	9.59E+2	1.44E+3	2.36E+3	2.86E+3	4.43E+3
	12	1.75E+2	3.35E+2	5.80E+2	1.02E+3	1.58E+3	2.49E+3	3.12E+3	4.65E+3
1	24	2.48E+2	4.08E+2	7.84E+2	1.21E+3	2.07E+3	2.90E+3	4.01E+3	5.37E+3
2		3.76E+2	4.85E+2	1.23E+3	1.53E+3	3.14E+3	3.73E+3	5.98E+3	6.93E+3
4		5.09E+2	5.49E+2	1.81E+3	1.90E+3	4.58E+3	4.75E+3	8.62E+3	8.88E+3
8		5.87E+2	6.12E+2	2.14E+3	2.17E+3	5.42E+3	5.45E+3	1.02E+4	1.02E+4
10		6.14E+2	6.40E+2	2.24E+3	2.27E+3	5.67E+3	5.71E+3	1.06E+4	1.07E+4
20		7.41E+2	7.72E+2	2.71E+3	2.74E+3	6.87E+3	6.91E+3	1.29E+4	1.29E+4
30		8.66E+2	9.02E+2	3.17E+3	3.21E+3	8.04E+3	8.08E+3	1.51E+4	1.51E+4

Table A-28 (continued)

Time post intake		Distance from chest/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
15-y-old									
	1	1.68E+2	3.55E+2	5.72E+2	1.12E+3	1.54E+3	2.70E+3	3.02E+3	5.02E+3
	2	1.82E+2	3.81E+2	6.04E+2	1.15E+3	1.60E+3	2.73E+3	3.12E+3	5.05E+3
	4	2.04E+2	4.15E+2	6.49E+2	1.20E+3	1.69E+3	2.81E+3	3.27E+3	5.17E+3
	8	2.43E+2	4.73E+2	7.29E+2	1.30E+3	1.86E+3	2.99E+3	3.57E+3	5.45E+3
	12	2.84E+2	5.23E+2	8.15E+2	1.39E+3	2.04E+3	3.15E+3	3.89E+3	5.72E+3
1	24	4.03E+2	6.28E+2	1.09E+3	1.62E+3	2.65E+3	3.63E+3	4.95E+3	6.53E+3
2		5.85E+2	7.23E+2	1.64E+3	1.99E+3	3.88E+3	4.53E+3	7.14E+3	8.16E+3
4		7.54E+2	7.99E+2	2.28E+3	2.37E+3	5.42E+3	5.57E+3	9.88E+3	1.01E+4
8		8.61E+2	8.87E+2	2.66E+3	2.68E+3	6.32E+3	6.34E+3	1.15E+4	1.15E+4
10		9.00E+2	9.27E+2	2.78E+3	2.80E+3	6.62E+3	6.63E+3	1.21E+4	1.21E+4
20		1.09E+3	1.12E+3	3.36E+3	3.39E+3	8.02E+3	8.02E+3	1.46E+4	1.46E+4
30		1.27E+3	1.31E+3	3.93E+3	3.96E+3	9.38E+3	9.38E+3	1.71E+4	1.71E+4
Adult male									
	1	1.86E+2	3.41E+2	5.85E+2	1.13E+3	1.55E+3	2.71E+3	3.05E+3	4.48E+3
	2	2.05E+2	3.69E+2	6.09E+2	1.17E+3	1.60E+3	2.76E+3	3.12E+3	4.58E+3
	4	2.26E+2	4.05E+2	6.41E+2	1.23E+3	1.66E+3	2.88E+3	3.23E+3	4.75E+3
	8	2.58E+2	4.58E+2	7.04E+2	1.33E+3	1.80E+3	3.07E+3	3.48E+3	5.03E+3
	12	2.92E+2	5.01E+2	7.79E+2	1.41E+3	1.97E+3	3.24E+3	3.78E+3	5.28E+3
1	24	3.87E+2	5.88E+2	1.04E+3	1.62E+3	2.55E+3	3.69E+3	4.80E+3	6.02E+3
2		5.22E+2	6.82E+2	1.58E+3	1.99E+3	3.80E+3	4.57E+3	7.02E+3	7.60E+3
4		6.38E+2	7.69E+2	2.24E+3	2.40E+3	5.43E+3	5.63E+3	9.90E+3	9.58E+3
8		7.21E+2	8.58E+2	2.63E+3	2.72E+3	6.38E+3	6.41E+3	1.16E+4	1.10E+4
10		7.54E+2	8.97E+2	2.75E+3	2.85E+3	6.68E+3	6.71E+3	1.22E+4	1.15E+4
20		9.11E+2	1.08E+3	3.34E+3	3.44E+3	8.10E+3	8.11E+3	1.47E+4	1.39E+4
30		1.06E+3	1.27E+3	3.90E+3	4.03E+3	9.48E+3	9.49E+3	1.73E+4	1.62E+4
Adult female									
	1	1.65E+2	2.72E+2	5.43E+2	1.00E+3	1.48E+3	2.42E+3	2.91E+3	5.01E+3
	2	1.80E+2	3.02E+2	5.64E+2	1.05E+3	1.51E+3	2.49E+3	2.95E+3	5.08E+3
	4	2.01E+2	3.39E+2	5.96E+2	1.12E+3	1.57E+3	2.60E+3	3.06E+3	5.27E+3
	8	2.36E+2	3.93E+2	6.63E+2	1.21E+3	1.71E+3	2.77E+3	3.31E+3	5.59E+3
	12	2.69E+2	4.38E+2	7.38E+2	1.29E+3	1.88E+3	2.92E+3	3.60E+3	5.87E+3
1	24	3.61E+2	5.25E+2	9.88E+2	1.49E+3	2.45E+3	3.34E+3	4.60E+3	6.66E+3
2		4.94E+2	6.05E+2	1.49E+3	1.83E+3	3.62E+3	4.20E+3	6.68E+3	8.25E+3
4		6.13E+2	6.74E+2	2.08E+3	2.21E+3	5.06E+3	5.25E+3	9.26E+3	1.02E+4
8		6.95E+2	7.50E+2	2.42E+3	2.51E+3	5.91E+3	6.01E+3	1.08E+4	1.16E+4
10		7.27E+2	7.84E+2	2.53E+3	2.63E+3	6.19E+3	6.29E+3	1.13E+4	1.22E+4
20		8.78E+2	9.46E+2	3.07E+3	3.18E+3	7.50E+3	7.61E+3	1.37E+4	1.47E+4
30		1.03E+3	1.11E+3	3.59E+3	3.72E+3	8.77E+3	8.89E+3	1.60E+4	1.72E+4

Table A-29. Inhaled Activity of Type M ¹⁹²Ir vs. Exposure Rate (Bq per µR/h)

Time post intake		Distance from chest/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	2.73E+1	5.58E+1	2.45E+2	4.10E+2	8.35E+2	1.26E+3	1.76E+3	2.55E+3
	2	2.98E+1	5.79E+1	2.54E+2	4.09E+2	8.61E+2	1.25E+3	1.81E+3	2.53E+3
	4	3.24E+1	6.05E+1	2.66E+2	4.17E+2	8.94E+2	1.27E+3	1.87E+3	2.58E+3
	8	3.59E+1	6.44E+1	2.88E+2	4.38E+2	9.59E+2	1.33E+3	2.01E+3	2.70E+3
	12	4.00E+1	6.85E+1	3.14E+2	4.63E+2	1.04E+3	1.41E+3	2.17E+3	2.84E+3
1	24	5.52E+1	8.16E+1	4.20E+2	5.63E+2	1.37E+3	1.71E+3	2.84E+3	3.48E+3
2		9.28E+1	1.08E+2	7.35E+2	8.59E+2	2.36E+3	2.66E+3	4.88E+3	5.44E+3
4		1.50E+2	1.38E+2	1.38E+3	1.38E+3	4.45E+3	4.43E+3	9.14E+3	9.13E+3
8		1.79E+2	1.57E+2	1.75E+3	1.66E+3	5.63E+3	5.40E+3	1.16E+4	1.12E+4
10		1.87E+2	1.64E+2	1.83E+3	1.73E+3	5.88E+3	5.64E+3	1.21E+4	1.17E+4
20		2.28E+2	2.01E+2	2.21E+3	2.10E+3	7.11E+3	6.84E+3	1.46E+4	1.41E+4
30		2.74E+2	2.43E+2	2.64E+3	2.52E+3	8.47E+3	8.16E+3	1.74E+4	1.69E+4
1-y-old									
	1	4.56E+1	9.25E+1	2.69E+2	5.20E+2	8.82E+2	1.51E+3	1.83E+3	2.99E+3
	2	5.05E+1	9.74E+1	2.84E+2	5.18E+2	9.15E+2	1.49E+3	1.89E+3	2.95E+3
	4	5.53E+1	1.02E+2	2.99E+2	5.28E+2	9.54E+2	1.51E+3	1.97E+3	2.99E+3
	8	6.14E+1	1.08E+2	3.25E+2	5.55E+2	1.03E+3	1.58E+3	2.11E+3	3.12E+3
	12	6.82E+1	1.14E+2	3.57E+2	5.84E+2	1.12E+3	1.66E+3	2.28E+3	3.27E+3
1	24	9.22E+1	1.32E+2	4.82E+2	7.01E+2	1.48E+3	1.99E+3	3.00E+3	3.92E+3
2		1.45E+2	1.63E+2	8.41E+2	1.02E+3	2.55E+3	2.99E+3	5.15E+3	5.94E+3
4		2.11E+2	1.95E+2	1.52E+3	1.53E+3	4.69E+3	4.71E+3	9.47E+3	9.54E+3
8		2.45E+2	2.18E+2	1.89E+3	1.80E+3	5.87E+3	5.65E+3	1.19E+4	1.15E+4
10		2.56E+2	2.27E+2	1.98E+3	1.88E+3	6.12E+3	5.89E+3	1.24E+4	1.20E+4
20		3.12E+2	2.78E+2	2.39E+3	2.27E+3	7.39E+3	7.12E+3	1.49E+4	1.45E+4
30		3.76E+2	3.36E+2	2.85E+3	2.72E+3	8.79E+3	8.48E+3	1.77E+4	1.72E+4
5-y-old									
	1	7.68E+1	1.37E+2	3.50E+2	6.78E+2	1.09E+3	1.90E+3	2.25E+3	3.74E+3
	2	8.51E+1	1.45E+2	3.71E+2	6.79E+2	1.14E+3	1.88E+3	2.33E+3	3.69E+3
	4	9.31E+1	1.52E+2	3.93E+2	6.95E+2	1.19E+3	1.91E+3	2.43E+3	3.74E+3
	8	1.03E+2	1.61E+2	4.27E+2	7.31E+2	1.27E+3	2.00E+3	2.60E+3	3.89E+3
	12	1.13E+2	1.69E+2	4.69E+2	7.69E+2	1.38E+3	2.09E+3	2.81E+3	4.07E+3
1	24	1.47E+2	1.91E+2	6.28E+2	9.08E+2	1.82E+3	2.47E+3	3.66E+3	4.80E+3
2		2.10E+2	2.21E+2	1.04E+3	1.24E+3	3.01E+3	3.52E+3	6.04E+3	6.93E+3
4		2.76E+2	2.50E+2	1.72E+3	1.70E+3	5.12E+3	5.14E+3	1.03E+4	1.03E+4
8		3.14E+2	2.77E+2	2.08E+3	1.96E+3	6.23E+3	6.02E+3	1.26E+4	1.22E+4
10		3.28E+2	2.89E+2	2.17E+3	2.04E+3	6.50E+3	6.28E+3	1.32E+4	1.27E+4
20		4.01E+2	3.55E+2	2.63E+3	2.48E+3	7.86E+3	7.60E+3	1.59E+4	1.53E+4
30		4.84E+2	4.31E+2	3.14E+3	2.98E+3	9.37E+3	9.08E+3	1.89E+4	1.83E+4
10-y-old									
	1	1.05E+2	1.89E+2	3.88E+2	7.77E+2	1.14E+3	2.06E+3	2.33E+3	4.00E+3
	2	1.16E+2	2.02E+2	4.15E+2	7.85E+2	1.19E+3	2.05E+3	2.42E+3	3.96E+3
	4	1.28E+2	2.13E+2	4.43E+2	8.07E+2	1.25E+3	2.09E+3	2.52E+3	4.01E+3
	8	1.42E+2	2.25E+2	4.84E+2	8.54E+2	1.35E+3	2.19E+3	2.70E+3	4.19E+3
	12	1.56E+2	2.36E+2	5.33E+2	9.01E+2	1.47E+3	2.30E+3	2.93E+3	4.38E+3
1	24	2.02E+2	2.64E+2	7.19E+2	1.07E+3	1.95E+3	2.72E+3	3.85E+3	5.19E+3
2		2.82E+2	3.01E+2	1.19E+3	1.44E+3	3.26E+3	3.87E+3	6.42E+3	7.50E+3
4		3.62E+2	3.35E+2	1.93E+3	1.93E+3	5.56E+3	5.61E+3	1.11E+4	1.12E+4
8		4.10E+2	3.69E+2	2.32E+3	2.20E+3	6.79E+3	6.56E+3	1.36E+4	1.32E+4
10		4.28E+2	3.86E+2	2.42E+3	2.30E+3	7.08E+3	6.84E+3	1.42E+4	1.37E+4
20		5.25E+2	4.75E+2	2.94E+3	2.80E+3	8.58E+3	8.29E+3	1.72E+4	1.66E+4
30		6.37E+2	5.77E+2	3.53E+3	3.36E+3	1.03E+4	9.92E+3	2.05E+4	1.98E+4

Table A-29 (continued)

Time post intake		Distance from chest/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
15-y-old									
	1	1.63E+2	2.66E+2	5.29E+2	9.80E+2	1.44E+3	2.50E+3	2.86E+3	4.76E+3
	2	1.79E+2	2.82E+2	5.68E+2	1.00E+3	1.51E+3	2.50E+3	2.98E+3	4.73E+3
	4	1.95E+2	2.97E+2	6.06E+2	1.03E+3	1.59E+3	2.55E+3	3.11E+3	4.81E+3
	8	2.14E+2	3.12E+2	6.60E+2	1.09E+3	1.70E+3	2.67E+3	3.32E+3	5.01E+3
	12	2.33E+2	3.24E+2	7.22E+2	1.14E+3	1.85E+3	2.80E+3	3.58E+3	5.23E+3
1	24	2.87E+2	3.53E+2	9.42E+2	1.32E+3	2.39E+3	3.24E+3	4.58E+3	6.05E+3
2		3.69E+2	3.87E+2	1.42E+3	1.65E+3	3.71E+3	4.29E+3	7.14E+3	8.17E+3
4		4.41E+2	4.19E+2	2.03E+3	2.02E+3	5.63E+3	5.66E+3	1.10E+4	1.11E+4
8		4.93E+2	4.60E+2	2.36E+3	2.26E+3	6.65E+3	6.47E+3	1.31E+4	1.28E+4
10		5.16E+2	4.81E+2	2.46E+3	2.36E+3	6.94E+3	6.75E+3	1.37E+4	1.33E+4
20		6.36E+2	5.93E+2	3.01E+3	2.88E+3	8.44E+3	8.20E+3	1.66E+4	1.62E+4
30		7.74E+2	7.22E+2	3.62E+3	3.47E+3	1.01E+4	9.84E+3	1.99E+4	1.93E+4
Adult male									
	1	1.38E+2	2.58E+2	5.06E+2	1.03E+3	1.42E+3	2.66E+3	2.84E+3	4.29E+3
	2	1.54E+2	2.77E+2	5.32E+2	1.06E+3	1.46E+3	2.69E+3	2.91E+3	4.38E+3
	4	1.67E+2	2.97E+2	5.53E+2	1.11E+3	1.50E+3	2.79E+3	2.97E+3	4.52E+3
	8	1.79E+2	3.15E+2	5.89E+2	1.18E+3	1.58E+3	2.95E+3	3.13E+3	4.71E+3
	12	1.91E+2	3.27E+2	6.41E+2	1.24E+3	1.71E+3	3.08E+3	3.35E+3	4.87E+3
1	24	2.29E+2	3.56E+2	8.39E+2	1.41E+3	2.20E+3	3.52E+3	4.28E+3	5.56E+3
2		2.82E+2	3.98E+2	1.29E+3	1.79E+3	3.45E+3	4.68E+3	6.72E+3	7.52E+3
4		3.26E+2	4.42E+2	1.86E+3	2.26E+3	5.32E+3	6.32E+3	1.05E+4	1.04E+4
8		3.62E+2	4.87E+2	2.16E+3	2.56E+3	6.31E+3	7.25E+3	1.26E+4	1.20E+4
10		3.78E+2	5.08E+2	2.25E+3	2.67E+3	6.58E+3	7.55E+3	1.31E+4	1.25E+4
20		4.66E+2	6.22E+2	2.75E+3	3.24E+3	8.01E+3	9.13E+3	1.59E+4	1.52E+4
30		5.67E+2	7.53E+2	3.32E+3	3.88E+3	9.61E+3	1.09E+4	1.90E+4	1.81E+4
Adult female									
	1	1.38E+2	1.84E+2	4.96E+2	8.53E+2	1.39E+3	2.24E+3	2.79E+3	5.06E+3
	2	1.53E+2	2.02E+2	5.19E+2	8.99E+2	1.42E+3	2.30E+3	2.82E+3	5.09E+3
	4	1.68E+2	2.18E+2	5.44E+2	9.49E+2	1.46E+3	2.39E+3	2.88E+3	5.26E+3
	8	1.87E+2	2.32E+2	5.92E+2	9.99E+2	1.56E+3	2.50E+3	3.07E+3	5.54E+3
	12	2.04E+2	2.40E+2	6.52E+2	1.04E+3	1.70E+3	2.59E+3	3.32E+3	5.77E+3
1	24	2.46E+2	2.57E+2	8.69E+2	1.16E+3	2.25E+3	2.94E+3	4.34E+3	6.61E+3
2		3.06E+2	2.78E+2	1.35E+3	1.44E+3	3.60E+3	3.89E+3	6.94E+3	8.94E+3
4		3.58E+2	3.02E+2	1.97E+3	1.79E+3	5.59E+3	5.23E+3	1.10E+4	1.23E+4
8		3.97E+2	3.32E+2	2.29E+3	2.02E+3	6.61E+3	6.00E+3	1.31E+4	1.42E+4
10		4.15E+2	3.46E+2	2.39E+3	2.10E+3	6.90E+3	6.26E+3	1.36E+4	1.48E+4
20		5.09E+2	4.26E+2	2.91E+3	2.57E+3	8.36E+3	7.59E+3	1.65E+4	1.79E+4
30		6.17E+2	5.18E+2	3.50E+3	3.09E+3	9.99E+3	9.09E+3	1.96E+4	2.13E+4

Table A-30. Inhaled Activity of Type S ¹⁹²Ir vs. Exposure Rate (Bq per μR/h)

Time post intake		Distance from chest/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	2.73E+1	5.55E+1	2.44E+2	4.10E+2	8.33E+2	1.26E+3	1.75E+3	2.55E+3
	2	2.99E+1	5.76E+1	2.54E+2	4.08E+2	8.59E+2	1.25E+3	1.80E+3	2.53E+3
	4	3.24E+1	6.01E+1	2.66E+2	4.15E+2	8.92E+2	1.27E+3	1.87E+3	2.57E+3
	8	3.59E+1	6.38E+1	2.87E+2	4.36E+2	9.55E+2	1.33E+3	2.00E+3	2.69E+3
	12	4.00E+1	6.77E+1	3.13E+2	4.61E+2	1.03E+3	1.40E+3	2.16E+3	2.83E+3
1	24	5.51E+1	8.06E+1	4.20E+2	5.62E+2	1.37E+3	1.71E+3	2.84E+3	3.48E+3
2		9.33E+1	1.07E+2	7.47E+2	8.72E+2	2.41E+3	2.71E+3	4.97E+3	5.54E+3
4		1.52E+2	1.37E+2	1.45E+3	1.43E+3	4.70E+3	4.65E+3	9.68E+3	9.60E+3
8		1.80E+2	1.54E+2	1.85E+3	1.73E+3	6.00E+3	5.69E+3	1.23E+4	1.18E+4
10		1.87E+2	1.60E+2	1.92E+3	1.80E+3	6.24E+3	5.92E+3	1.28E+4	1.23E+4
20		2.23E+2	1.91E+2	2.30E+3	2.15E+3	7.46E+3	7.06E+3	1.53E+4	1.46E+4
30		2.63E+2	2.25E+2	2.71E+3	2.53E+3	8.79E+3	8.33E+3	1.81E+4	1.73E+4
1-y-old									
	1	4.56E+1	9.15E+1	2.69E+2	5.19E+2	8.79E+2	1.51E+3	1.83E+3	2.98E+3
	2	5.07E+1	9.64E+1	2.83E+2	5.16E+2	9.13E+2	1.49E+3	1.89E+3	2.95E+3
	4	5.54E+1	1.01E+2	2.98E+2	5.25E+2	9.52E+2	1.51E+3	1.96E+3	2.98E+3
	8	6.13E+1	1.07E+2	3.24E+2	5.51E+2	1.02E+3	1.57E+3	2.10E+3	3.10E+3
	12	6.79E+1	1.12E+2	3.55E+2	5.80E+2	1.11E+3	1.65E+3	2.27E+3	3.25E+3
1	24	9.15E+1	1.30E+2	4.81E+2	6.98E+2	1.47E+3	1.98E+3	3.00E+3	3.92E+3
2		1.44E+2	1.60E+2	8.49E+2	1.03E+3	2.58E+3	3.03E+3	5.23E+3	6.04E+3
4		2.09E+2	1.89E+2	1.58E+3	1.56E+3	4.90E+3	4.90E+3	9.93E+3	9.94E+3
8		2.40E+2	2.09E+2	1.96E+3	1.84E+3	6.16E+3	5.86E+3	1.25E+4	1.20E+4
10		2.49E+2	2.16E+2	2.04E+3	1.90E+3	6.40E+3	6.09E+3	1.30E+4	1.24E+4
20		2.96E+2	2.57E+2	2.42E+3	2.26E+3	7.60E+3	7.23E+3	1.54E+4	1.48E+4
30		3.48E+2	3.02E+2	2.84E+3	2.66E+3	8.93E+3	8.49E+3	1.81E+4	1.73E+4
5-y-old									
	1	7.66E+1	1.35E+2	3.48E+2	6.73E+2	1.09E+3	1.89E+3	2.25E+3	3.73E+3
	2	8.52E+1	1.42E+2	3.70E+2	6.74E+2	1.13E+3	1.87E+3	2.33E+3	3.68E+3
	4	9.31E+1	1.49E+2	3.91E+2	6.89E+2	1.18E+3	1.90E+3	2.42E+3	3.72E+3
	8	1.02E+2	1.57E+2	4.25E+2	7.23E+2	1.27E+3	1.98E+3	2.58E+3	3.87E+3
	12	1.12E+2	1.64E+2	4.66E+2	7.60E+2	1.38E+3	2.07E+3	2.79E+3	4.04E+3
1	24	1.45E+2	1.84E+2	6.24E+2	8.98E+2	1.81E+3	2.46E+3	3.64E+3	4.79E+3
2		2.05E+2	2.12E+2	1.04E+3	1.24E+3	3.03E+3	3.54E+3	6.10E+3	6.98E+3
4		2.67E+2	2.38E+2	1.74E+3	1.70E+3	5.25E+3	5.23E+3	1.07E+4	1.06E+4
8		2.99E+2	2.59E+2	2.09E+3	1.94E+3	6.38E+3	6.10E+3	1.30E+4	1.24E+4
10		3.10E+2	2.69E+2	2.17E+3	2.02E+3	6.62E+3	6.33E+3	1.35E+4	1.29E+4
20		3.68E+2	3.20E+2	2.57E+3	2.39E+3	7.86E+3	7.52E+3	1.61E+4	1.53E+4
30		4.32E+2	3.76E+2	3.02E+3	2.81E+3	9.24E+3	8.84E+3	1.89E+4	1.80E+4
10-y-old									
	1	1.05E+2	1.85E+2	3.86E+2	7.70E+2	1.13E+3	2.05E+3	2.32E+3	3.99E+3
	2	1.17E+2	1.98E+2	4.13E+2	7.78E+2	1.19E+3	2.04E+3	2.41E+3	3.94E+3
	4	1.28E+2	2.08E+2	4.40E+2	7.99E+2	1.25E+3	2.07E+3	2.51E+3	3.99E+3
	8	1.41E+2	2.19E+2	4.80E+2	8.43E+2	1.34E+3	2.17E+3	2.69E+3	4.16E+3
	12	1.54E+2	2.28E+2	5.28E+2	8.89E+2	1.46E+3	2.28E+3	2.91E+3	4.35E+3
1	24	1.97E+2	2.53E+2	7.12E+2	1.05E+3	1.94E+3	2.70E+3	3.83E+3	5.17E+3
2		2.73E+2	2.87E+2	1.19E+3	1.43E+3	3.27E+3	3.88E+3	6.46E+3	7.55E+3
4		3.47E+2	3.17E+2	1.94E+3	1.91E+3	5.67E+3	5.68E+3	1.14E+4	1.14E+4
8		3.87E+2	3.44E+2	2.30E+3	2.17E+3	6.88E+3	6.60E+3	1.40E+4	1.34E+4
10		4.01E+2	3.57E+2	2.39E+3	2.25E+3	7.15E+3	6.85E+3	1.45E+4	1.39E+4
20		4.77E+2	4.24E+2	2.84E+3	2.67E+3	8.50E+3	8.14E+3	1.72E+4	1.66E+4
30		5.60E+2	4.99E+2	3.33E+3	3.13E+3	9.98E+3	9.56E+3	2.02E+4	1.94E+4

Table A-30 (continued)

Time post intake		Distance from chest/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
15-y-old									
	1	1.63E+2	2.59E+2	5.25E+2	9.67E+2	1.43E+3	2.48E+3	2.85E+3	4.73E+3
	2	1.79E+2	2.74E+2	5.64E+2	9.85E+2	1.50E+3	2.48E+3	2.97E+3	4.70E+3
	4	1.94E+2	2.88E+2	6.01E+2	1.02E+3	1.58E+3	2.53E+3	3.09E+3	4.77E+3
	8	2.12E+2	3.00E+2	6.53E+2	1.07E+3	1.69E+3	2.64E+3	3.29E+3	4.97E+3
	12	2.28E+2	3.11E+2	7.12E+2	1.12E+3	1.83E+3	2.76E+3	3.55E+3	5.18E+3
1	24	2.78E+2	3.36E+2	9.28E+2	1.29E+3	2.36E+3	3.20E+3	4.54E+3	6.00E+3
2		3.53E+2	3.66E+2	1.40E+3	1.61E+3	3.68E+3	4.26E+3	7.12E+3	8.15E+3
4		4.17E+2	3.93E+2	1.99E+3	1.96E+3	5.62E+3	5.63E+3	1.11E+4	1.12E+4
8		4.59E+2	4.25E+2	2.28E+3	2.18E+3	6.59E+3	6.38E+3	1.31E+4	1.28E+4
10		4.76E+2	4.41E+2	2.37E+3	2.26E+3	6.84E+3	6.62E+3	1.36E+4	1.32E+4
20		5.68E+2	5.25E+2	2.82E+3	2.69E+3	8.14E+3	7.87E+3	1.62E+4	1.58E+4
30		6.70E+2	6.18E+2	3.33E+3	3.16E+3	9.59E+3	9.26E+3	1.91E+4	1.85E+4
Adult male									
	1	1.35E+2	2.51E+2	4.99E+2	1.02E+3	1.40E+3	2.65E+3	2.82E+3	4.26E+3
	2	1.50E+2	2.70E+2	5.25E+2	1.05E+3	1.44E+3	2.69E+3	2.89E+3	4.36E+3
	4	1.63E+2	2.88E+2	5.45E+2	1.10E+3	1.48E+3	2.78E+3	2.95E+3	4.50E+3
	8	1.73E+2	3.04E+2	5.79E+2	1.17E+3	1.56E+3	2.94E+3	3.09E+3	4.67E+3
	12	1.84E+2	3.15E+2	6.28E+2	1.22E+3	1.68E+3	3.06E+3	3.31E+3	4.83E+3
1	24	2.18E+2	3.40E+2	8.21E+2	1.38E+3	2.17E+3	3.50E+3	4.23E+3	5.51E+3
2		2.67E+2	3.78E+2	1.26E+3	1.76E+3	3.41E+3	4.69E+3	6.68E+3	7.49E+3
4		3.05E+2	4.17E+2	1.81E+3	2.23E+3	5.28E+3	6.37E+3	1.06E+4	1.04E+4
8		3.33E+2	4.53E+2	2.07E+3	2.50E+3	6.20E+3	7.26E+3	1.25E+4	1.20E+4
10		3.46E+2	4.69E+2	2.15E+3	2.59E+3	6.44E+3	7.53E+3	1.30E+4	1.24E+4
20		4.11E+2	5.55E+2	2.56E+3	3.07E+3	7.66E+3	8.93E+3	1.54E+4	1.48E+4
30		4.84E+2	6.50E+2	3.01E+3	3.60E+3	9.01E+3	1.05E+4	1.82E+4	1.73E+4
Adult female									
	1	1.36E+2	1.78E+2	4.92E+2	8.40E+2	1.38E+3	2.22E+3	2.78E+3	5.06E+3
	2	1.50E+2	1.95E+2	5.14E+2	8.85E+2	1.41E+3	2.29E+3	2.81E+3	5.09E+3
	4	1.66E+2	2.10E+2	5.39E+2	9.33E+2	1.45E+3	2.37E+3	2.86E+3	5.25E+3
	8	1.83E+2	2.21E+2	5.86E+2	9.80E+2	1.55E+3	2.47E+3	3.04E+3	5.53E+3
	12	1.98E+2	2.28E+2	6.43E+2	1.02E+3	1.68E+3	2.56E+3	3.30E+3	5.76E+3
1	24	2.38E+2	2.42E+2	8.57E+2	1.13E+3	2.23E+3	2.90E+3	4.31E+3	6.61E+3
2		2.92E+2	2.61E+2	1.34E+3	1.41E+3	3.59E+3	3.85E+3	6.97E+3	9.01E+3
4		3.38E+2	2.80E+2	1.95E+3	1.74E+3	5.62E+3	5.19E+3	1.12E+4	1.26E+4
8		3.69E+2	3.03E+2	2.24E+3	1.93E+3	6.62E+3	5.90E+3	1.32E+4	1.45E+4
10		3.83E+2	3.14E+2	2.33E+3	2.00E+3	6.87E+3	6.12E+3	1.37E+4	1.50E+4
20		4.54E+2	3.72E+2	2.77E+3	2.38E+3	8.17E+3	7.26E+3	1.63E+4	1.78E+4
30		5.33E+2	4.37E+2	3.25E+3	2.79E+3	9.61E+3	8.53E+3	1.92E+4	2.09E+4

Table A-31. Ingested Activity of ¹⁹²Ir vs. Exposure Rate (Bq per μR/h)

Time post intake		Distance from abdomen/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
Infant									
	1	1.28E+1	2.19E+1	1.54E+2	2.00E+2	5.14E+2	6.35E+2	1.07E+3	1.30E+3
	2	1.42E+1	2.13E+1	1.59E+2	1.95E+2	5.25E+2	6.20E+2	1.09E+3	1.27E+3
	4	1.50E+1	2.19E+1	1.61E+2	1.96E+2	5.29E+2	6.21E+2	1.10E+3	1.27E+3
	8	1.59E+1	2.38E+1	1.65E+2	2.03E+2	5.40E+2	6.38E+2	1.12E+3	1.31E+3
	12	1.74E+1	2.58E+1	1.75E+2	2.12E+2	5.70E+2	6.68E+2	1.19E+3	1.37E+3
1	24	2.55E+1	3.51E+1	2.33E+2	2.72E+2	7.53E+2	8.51E+2	1.56E+3	1.75E+3
2		6.13E+1	7.72E+1	5.16E+2	5.76E+2	1.65E+3	1.80E+3	3.42E+3	3.70E+3
4		3.40E+2	4.02E+2	2.82E+3	3.04E+3	8.97E+3	9.52E+3	1.85E+4	1.96E+4
8		1.40E+3	1.54E+3	1.28E+4	1.32E+4	4.05E+4	4.11E+4	8.31E+4	8.46E+4
10		1.54E+3	1.69E+3	1.42E+4	1.45E+4	4.48E+4	4.54E+4	9.19E+4	9.33E+4
20		1.88E+3	2.06E+3	1.74E+4	1.77E+4	5.48E+4	5.54E+4	1.12E+5	1.14E+5
30		2.21E+3	2.41E+3	2.04E+4	2.07E+4	6.42E+4	6.49E+4	1.32E+5	1.33E+5
1-y-old									
	1	1.82E+1	3.50E+1	1.73E+2	2.47E+2	5.62E+2	7.50E+2	1.15E+3	1.51E+3
	2	2.11E+1	3.42E+1	1.81E+2	2.39E+2	5.79E+2	7.27E+2	1.18E+3	1.46E+3
	4	2.29E+1	3.53E+1	1.84E+2	2.40E+2	5.84E+2	7.27E+2	1.19E+3	1.46E+3
	8	2.44E+1	3.90E+1	1.89E+2	2.50E+2	5.96E+2	7.50E+2	1.22E+3	1.50E+3
	12	2.72E+1	4.31E+1	2.02E+2	2.63E+2	6.31E+2	7.84E+2	1.29E+3	1.57E+3
1	24	4.12E+1	6.03E+1	2.74E+2	3.38E+2	8.42E+2	9.98E+2	1.71E+3	2.00E+3
2		1.04E+2	1.38E+2	6.21E+2	7.25E+2	1.88E+3	2.13E+3	3.80E+3	4.26E+3
4		6.51E+2	8.05E+2	3.78E+3	4.25E+3	1.14E+4	1.25E+4	2.29E+4	2.49E+4
8		4.17E+3	4.66E+3	2.92E+4	3.03E+4	8.68E+4	8.90E+4	1.74E+5	1.78E+5
10		4.75E+3	5.27E+3	3.42E+4	3.50E+4	1.01E+5	1.03E+5	2.03E+5	2.06E+5
20		5.85E+3	6.46E+3	4.22E+4	4.32E+4	1.25E+5	1.27E+5	2.50E+5	2.54E+5
30		6.84E+3	7.56E+3	4.94E+4	5.05E+4	1.46E+5	1.49E+5	2.93E+5	2.97E+5
5-y-old									
	1	2.36E+1	4.80E+1	1.87E+2	2.79E+2	5.97E+2	8.29E+2	1.22E+3	1.65E+3
	2	2.85E+1	4.74E+1	1.97E+2	2.70E+2	6.20E+2	8.02E+2	1.26E+3	1.60E+3
	4	3.16E+1	4.94E+1	2.02E+2	2.72E+2	6.27E+2	8.03E+2	1.27E+3	1.60E+3
	8	3.40E+1	5.53E+1	2.08E+2	2.86E+2	6.41E+2	8.32E+2	1.30E+3	1.65E+3
	12	3.82E+1	6.21E+1	2.23E+2	3.03E+2	6.80E+2	8.72E+2	1.38E+3	1.73E+3
1	24	5.98E+1	9.02E+1	3.08E+2	3.92E+2	9.14E+2	1.11E+3	1.84E+3	2.20E+3
2		1.57E+2	2.13E+2	7.07E+2	8.47E+2	2.06E+3	2.38E+3	4.11E+3	4.68E+3
4		9.87E+2	1.24E+3	4.34E+3	4.97E+3	1.25E+4	1.39E+4	2.48E+4	2.73E+4
8		5.77E+3	6.55E+3	3.40E+4	3.53E+4	9.61E+4	9.87E+4	1.89E+5	1.93E+5
10		6.52E+3	7.34E+3	3.98E+4	4.09E+4	1.12E+5	1.14E+5	2.21E+5	2.23E+5
20		8.00E+3	8.98E+3	4.92E+4	5.04E+4	1.39E+5	1.41E+5	2.72E+5	2.75E+5
30		9.36E+3	1.05E+4	5.76E+4	5.90E+4	1.62E+5	1.65E+5	3.19E+5	3.22E+5
10-y-old									
	1	3.05E+1	6.37E+1	2.00E+2	3.13E+2	6.25E+2	9.00E+2	1.28E+3	1.78E+3
	2	3.76E+1	6.37E+1	2.14E+2	3.03E+2	6.53E+2	8.69E+2	1.32E+3	1.72E+3
	4	4.23E+1	6.69E+1	2.21E+2	3.06E+2	6.63E+2	8.72E+2	1.34E+3	1.72E+3
	8	4.58E+1	7.57E+1	2.28E+2	3.24E+2	6.79E+2	9.07E+2	1.37E+3	1.78E+3
	12	5.20E+1	8.60E+1	2.46E+2	3.46E+2	7.22E+2	9.53E+2	1.45E+3	1.87E+3
1	24	8.37E+1	1.29E+2	3.44E+2	4.53E+2	9.77E+2	1.22E+3	1.94E+3	2.38E+3
2		2.27E+2	3.14E+2	8.00E+2	9.85E+2	2.21E+3	2.61E+3	4.35E+3	5.07E+3
4		1.44E+3	1.81E+3	4.95E+3	5.79E+3	1.35E+4	1.53E+4	2.63E+4	2.95E+4
8		7.83E+3	8.52E+3	3.92E+4	4.04E+4	1.06E+5	1.08E+5	2.03E+5	2.07E+5
10		8.79E+3	9.44E+3	4.60E+4	4.66E+4	1.24E+5	1.25E+5	2.37E+5	2.39E+5
20		1.08E+4	1.15E+4	5.69E+4	5.74E+4	1.53E+5	1.54E+5	2.93E+5	2.95E+5
30		1.26E+4	1.35E+4	6.66E+4	6.71E+4	1.79E+5	1.80E+5	3.43E+5	3.45E+5

Table A-31 (continued)

Time post intake		Distance from abdomen/aspect							
		2 in		1 ft		2 ft		3 ft	
d	h	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior	Anterior	Posterior
15-y-old									
	1	4.31E+1	9.24E+1	2.26E+2	3.72E+2	6.76E+2	1.02E+3	1.37E+3	1.99E+3
	2	5.43E+1	9.43E+1	2.45E+2	3.61E+2	7.11E+2	9.86E+2	1.42E+3	1.92E+3
	4	6.20E+1	1.00E+2	2.54E+2	3.68E+2	7.23E+2	9.93E+2	1.44E+3	1.93E+3
	8	6.76E+1	1.15E+2	2.64E+2	3.95E+2	7.41E+2	1.04E+3	1.47E+3	2.01E+3
	12	7.72E+1	1.32E+2	2.87E+2	4.25E+2	7.91E+2	1.10E+3	1.56E+3	2.10E+3
1	24	1.28E+2	2.04E+2	4.08E+2	5.65E+2	1.08E+3	1.41E+3	2.11E+3	2.67E+3
2		3.59E+2	5.12E+2	9.69E+2	1.24E+3	2.47E+3	3.01E+3	4.76E+3	5.69E+3
4		2.28E+3	2.89E+3	6.03E+3	7.27E+3	1.51E+4	1.76E+4	2.89E+4	3.31E+4
8		1.10E+4	1.17E+4	4.64E+4	4.76E+4	1.18E+5	1.21E+5	2.23E+5	2.27E+5
10		1.22E+4	1.28E+4	5.41E+4	5.45E+4	1.39E+5	1.39E+5	2.60E+5	2.62E+5
20		1.50E+4	1.56E+4	6.69E+4	6.70E+4	1.71E+5	1.71E+5	3.22E+5	3.22E+5
30		1.75E+4	1.82E+4	7.84E+4	7.84E+4	2.01E+5	2.00E+5	3.77E+5	3.77E+5
Adult male									
	1	5.19E+1	1.00E+2	2.72E+2	4.17E+2	7.77E+2	1.12E+3	1.54E+3	1.93E+3
	2	5.71E+1	1.09E+2	2.77E+2	4.24E+2	7.75E+2	1.12E+3	1.53E+3	1.97E+3
	4	5.66E+1	1.25E+2	2.69E+2	4.52E+2	7.49E+2	1.17E+3	1.49E+3	2.03E+3
	8	5.80E+1	1.51E+2	2.71E+2	4.94E+2	7.47E+2	1.25E+3	1.48E+3	2.08E+3
	12	6.65E+1	1.72E+2	2.94E+2	5.26E+2	7.94E+2	1.31E+3	1.56E+3	2.13E+3
1	24	1.19E+2	2.46E+2	4.31E+2	6.70E+2	1.10E+3	1.63E+3	2.10E+3	2.59E+3
2		3.81E+2	5.60E+2	1.06E+3	1.42E+3	2.55E+3	3.38E+3	4.77E+3	5.34E+3
4		2.73E+3	3.09E+3	6.82E+3	8.11E+3	1.59E+4	1.94E+4	2.94E+4	3.08E+4
8		1.44E+4	1.41E+4	5.71E+4	5.20E+4	1.37E+5	1.29E+5	2.49E+5	2.23E+5
10		1.61E+4	1.56E+4	6.75E+4	5.95E+4	1.62E+5	1.48E+5	2.95E+5	2.59E+5
20		1.98E+4	1.90E+4	8.36E+4	7.31E+4	2.01E+5	1.82E+5	3.65E+5	3.20E+5
30		2.31E+4	2.22E+4	9.80E+4	8.55E+4	2.36E+5	2.13E+5	4.28E+5	3.74E+5
Adult female									
	1	4.95E+1	8.95E+1	2.43E+2	3.73E+2	6.92E+2	9.98E+2	1.38E+3	2.17E+3
	2	5.80E+1	1.08E+2	2.43E+2	3.94E+2	6.78E+2	1.03E+3	1.35E+3	2.17E+3
	4	6.82E+1	1.31E+2	2.40E+2	4.18E+2	6.62E+2	1.07E+3	1.31E+3	2.25E+3
	8	8.29E+1	1.57E+2	2.51E+2	4.40E+2	6.81E+2	1.10E+3	1.34E+3	2.38E+3
	12	9.98E+1	1.77E+2	2.77E+2	4.58E+2	7.39E+2	1.13E+3	1.45E+3	2.48E+3
1	24	1.72E+2	2.50E+2	4.15E+2	5.69E+2	1.06E+3	1.37E+3	2.04E+3	3.07E+3
2		4.87E+2	5.63E+2	1.04E+3	1.19E+3	2.52E+3	2.83E+3	4.78E+3	6.36E+3
4		2.94E+3	3.01E+3	6.62E+3	6.86E+3	1.58E+4	1.64E+4	2.96E+4	3.63E+4
8		1.16E+4	1.23E+4	4.93E+4	4.77E+4	1.22E+5	1.20E+5	2.28E+5	2.40E+5
10		1.27E+4	1.35E+4	5.73E+4	5.50E+4	1.43E+5	1.39E+5	2.66E+5	2.75E+5
20		1.55E+4	1.64E+4	7.08E+4	6.78E+4	1.77E+5	1.71E+5	3.29E+5	3.38E+5
30		1.81E+4	1.92E+4	8.29E+4	7.93E+4	2.07E+5	2.01E+5	3.85E+5	3.95E+5

Appendix B

CUMULATIVE EFFECTIVE DOSE AT SELECTED TIMES AFTER INTAKE

Two sets of dose coefficients have been calculated for assessing the biological effects of internal exposure. The first are coefficients for the cumulative effective dose, which is the effective dose per unit intake that has been delivered to the internally contaminated individual from the time of acute intake until the time of the assessment. The second set represents the committed effective dose, absent any medical intervention. The committed effective dose to a child is defined as the integrated dose until age 70. The committed dose to an adult is the dose integrated over a period of 50 years following intake.

The cumulative effective dose coefficients in Tables B-1 to B-4 are tabulated at 12 time steps, a subset of the 50 time steps used by the ICAT computer code (Anigstein et al. 2014). These tables also list the committed effective dose per unit intake of each radionuclide to each reference individual. The inhalation dose coefficients are specific to the lung absorption type listed and to a particle size distribution with a 1 μm AMAD.

You can use these coefficients to determine doses resulting from intakes that you calculated using the calibration factors in Appendix A, an alternative to using ICAT. Look up the cumulative dose coefficient for the given radionuclide, pathway (inhalation or ingestion), lung absorption type for inhaled intakes, elapsed time from the time of intake until the present, and age closest to the age of the client. (Use the coefficients for age 20 for all clients age 17½ and older.) Multiply the calculated intake in Bq by the selected dose coefficient to obtain the effective dose that has already been delivered to the client. Use the committed effective dose coefficients to calculate the committed dose in a similar manner.

These dose calculations can be useful in assessing the efficacy of any potential medical intervention.

Table B-1. Cumulative Effective Dose Following Intake of ⁶⁰Co (Sv/Bq)

Time post intake		Age					
d	h	3 mo	1 y	5 y	10 y	15 y	20 y
Inhalation: Type M							
	1	9.97e-11	6.88e-11	3.62e-11	2.54e-11	1.93e-11	1.54e-11
	2	1.91e-10	1.34e-10	7.07e-11	4.96e-11	3.70e-11	2.96e-11
	4	3.60e-10	2.60e-10	1.37e-10	9.67e-11	7.03e-11	5.66e-11
	8	7.00e-10	5.17e-10	2.71e-10	1.91e-10	1.34e-10	1.09e-10
	12	1.05e-09	7.83e-10	4.08e-10	2.85e-10	1.98e-10	1.61e-10
1	24	2.01e-09	1.53e-09	7.88e-10	5.50e-10	3.76e-10	3.05e-10
2		3.41e-09	2.61e-09	1.36e-09	9.47e-10	6.59e-10	5.32e-10
4		4.95e-09	3.79e-09	2.04e-09	1.43e-09	1.05e-09	8.43e-10
8		6.90e-09	5.27e-09	2.96e-09	2.10e-09	1.65e-09	1.32e-09
10		7.75e-09	5.92e-09	3.37e-09	2.40e-09	1.92e-09	1.53e-09
20		1.14e-08	8.74e-09	5.14e-09	3.68e-09	3.08e-09	2.45e-09
30		1.42e-08	1.10e-08	6.55e-09	4.68e-09	3.98e-09	3.17e-09
Committed effective dose		4.16e-08	3.39e-08	2.13e-08	1.46e-08	1.21e-08	1.02e-08
Inhalation: Type S							
	1	1.04e-10	7.18e-11	3.79e-11	2.66e-11	2.04e-11	1.62e-11
	2	2.01e-10	1.41e-10	7.45e-11	5.25e-11	3.94e-11	3.15e-11
	4	3.84e-10	2.74e-10	1.46e-10	1.03e-10	7.52e-11	6.05e-11
	8	7.63e-10	5.53e-10	2.90e-10	2.04e-10	1.45e-10	1.17e-10
	12	1.16e-09	8.44e-10	4.40e-10	3.08e-10	2.14e-10	1.74e-10
1	24	2.29e-09	1.67e-09	8.60e-10	6.00e-10	4.11e-10	3.33e-10
2		3.93e-09	2.87e-09	1.49e-09	1.04e-09	7.25e-10	5.84e-10
4		5.64e-09	4.16e-09	2.23e-09	1.57e-09	1.16e-09	9.25e-10
8		7.69e-09	5.76e-09	3.24e-09	2.30e-09	1.82e-09	1.45e-09
10		8.60e-09	6.48e-09	3.69e-09	2.63e-09	2.13e-09	1.69e-09
20		1.26e-08	9.66e-09	5.72e-09	4.10e-09	3.47e-09	2.75e-09
30		1.59e-08	1.23e-08	7.40e-09	5.31e-09	4.57e-09	3.62e-09
Committed effective dose		9.15e-08	8.57e-08	5.88e-08	4.03e-08	3.42e-08	3.07e-08
Ingestion							
	1	2.79e-10	1.80e-10	1.01e-10	6.56e-11	4.65e-11	3.74e-11
	2	4.65e-10	3.16e-10	1.79e-10	1.17e-10	8.11e-11	6.60e-11
	4	7.69e-10	5.76e-10	3.28e-10	2.17e-10	1.46e-10	1.22e-10
	8	1.33e-09	1.12e-09	6.37e-10	4.24e-10	2.79e-10	2.44e-10
	12	1.88e-09	1.69e-09	9.56e-10	6.36e-10	4.16e-10	3.73e-10
1	24	3.36e-09	3.22e-09	1.82e-09	1.21e-09	7.87e-10	7.31e-10
2		5.35e-09	5.21e-09	2.95e-09	1.95e-09	1.27e-09	1.19e-09
4		7.08e-09	6.61e-09	3.74e-09	2.47e-09	1.61e-09	1.48e-09
8		8.47e-09	7.24e-09	4.11e-09	2.71e-09	1.77e-09	1.56e-09
10		8.99e-09	7.43e-09	4.22e-09	2.78e-09	1.82e-09	1.58e-09
20		1.10e-08	8.15e-09	4.64e-09	3.05e-09	2.00e-09	1.63e-09
30		1.24e-08	8.70e-09	4.96e-09	3.26e-09	2.15e-09	1.67e-09
Committed effective dose		5.42e-08	2.68e-08	1.69e-08	1.12e-08	7.94e-09	3.42e-09

Table B-2. Cumulative Effective Dose Following Intake of ¹³¹I (Sv/Bq)

Time post intake		Age					
d	h	3 mo	1 y	5 y	10 y	15 y	20 y
Inhalation: Type F							
	1	5.90e-11	4.04e-11	1.90e-11	1.14e-11	8.07e-12	6.21e-12
	2	1.31e-10	9.85e-11	4.58e-11	2.46e-11	1.61e-11	1.19e-11
	4	3.66e-10	3.05e-10	1.43e-10	6.99e-11	4.38e-11	3.06e-11
	8	1.15e-09	1.01e-09	4.72e-10	2.20e-10	1.34e-10	9.05e-11
	12	2.23e-09	1.99e-09	9.25e-10	4.24e-10	2.57e-10	1.71e-10
1	24	6.18e-09	5.58e-09	2.59e-09	1.17e-09	7.03e-10	4.62e-10
2		1.43e-08	1.30e-08	6.08e-09	2.75e-09	1.64e-09	1.07e-09
4		2.78e-08	2.57e-08	1.21e-08	5.52e-09	3.30e-09	2.15e-09
8		4.60e-08	4.33e-08	2.08e-08	9.70e-09	5.80e-09	3.79e-09
10		5.20e-08	4.93e-08	2.39e-08	1.13e-08	6.73e-09	4.40e-09
20		6.67e-08	6.49e-08	3.23e-08	1.58e-08	9.47e-09	6.21e-09
30		7.06e-08	6.96e-08	3.52e-08	1.75e-08	1.05e-08	6.92e-09
Committed effective dose		7.21e-08	7.16e-08	3.66e-08	1.86e-08	1.12e-08	7.39e-09
Ingestion							
	1	2.60e-10	1.51e-10	7.51e-11	4.29e-11	2.95e-11	2.30e-11
	2	4.47e-10	2.84e-10	1.44e-10	7.83e-11	5.33e-11	4.00e-11
	4	9.78e-10	7.30e-10	3.78e-10	1.89e-10	1.26e-10	8.84e-11
	8	2.85e-09	2.37e-09	1.24e-09	5.82e-10	3.83e-10	2.53e-10
	12	5.52e-09	4.74e-09	2.49e-09	1.14e-09	7.45e-10	4.82e-10
1	24	1.55e-08	1.37e-08	7.16e-09	3.23e-09	2.10e-09	1.33e-09
2		3.63e-08	3.23e-08	1.70e-08	7.66e-09	4.96e-09	3.13e-09
4		7.08e-08	6.39e-08	3.41e-08	1.55e-08	1.00e-08	6.31e-09
8		1.17e-07	1.08e-07	5.87e-08	2.72e-08	1.77e-08	1.11e-08
10		1.33e-07	1.23e-07	6.74e-08	3.16e-08	2.05e-08	1.29e-08
20		1.70e-07	1.62e-07	9.14e-08	4.44e-08	2.89e-08	1.83e-08
30		1.81e-07	1.74e-07	9.94e-08	4.93e-08	3.22e-08	2.04e-08
Committed effective dose		1.84e-07	1.79e-07	1.04e-07	5.24e-08	3.42e-08	2.17e-08

Table B-3. Cumulative Effective Dose Following Intake of ¹³⁷Cs (Sv/Bq)

Time post intake		Age					
d	h	3 mo	1 y	5 y	10 y	15 y	20 y
Inhalation: Type F							
	1	1.24e-10	8.50e-11	3.88e-11	2.49e-11	1.55e-11	1.31e-11
	2	1.78e-10	1.23e-10	5.68e-11	3.57e-11	2.17e-11	1.83e-11
	4	2.60e-10	1.85e-10	8.68e-11	5.38e-11	3.21e-11	2.69e-11
	8	3.97e-10	2.91e-10	1.38e-10	8.50e-11	5.00e-11	4.18e-11
	12	5.21e-10	3.86e-10	1.85e-10	1.13e-10	6.62e-11	5.53e-11
1	24	8.37e-10	6.24e-10	3.00e-10	1.84e-10	1.07e-10	8.91e-11
2		1.32e-09	9.74e-10	4.68e-10	2.86e-10	1.66e-10	1.39e-10
4		2.04e-09	1.47e-09	7.03e-10	4.32e-10	2.49e-10	2.11e-10
8		3.19e-09	2.24e-09	1.07e-09	6.63e-10	3.84e-10	3.29e-10
10		3.68e-09	2.57e-09	1.23e-09	7.64e-10	4.46e-10	3.85e-10
20		5.58e-09	3.75e-09	1.85e-09	1.19e-09	7.38e-10	6.50e-10
30		6.77e-09	4.44e-09	2.28e-09	1.53e-09	1.01e-09	8.97e-10
Committed effective dose		8.76e-09	5.42e-09	3.66e-09	3.75e-09	4.46e-09	4.67e-09
Ingestion							
	1	3.12e-10	1.76e-10	8.72e-11	5.09e-11	3.51e-11	2.77e-11
	2	4.51e-10	2.56e-10	1.28e-10	7.48e-11	5.12e-11	4.06e-11
	4	5.79e-10	3.35e-10	1.68e-10	9.92e-11	6.71e-11	5.35e-11
	8	7.37e-10	4.38e-10	2.22e-10	1.33e-10	8.81e-11	7.09e-11
	12	8.87e-10	5.37e-10	2.74e-10	1.65e-10	1.09e-10	8.79e-11
1	24	1.34e-09	8.34e-10	4.31e-10	2.63e-10	1.70e-10	1.39e-10
2		2.22e-09	1.42e-09	7.40e-10	4.54e-10	2.89e-10	2.38e-10
4		3.88e-09	2.53e-09	1.32e-09	8.17e-10	5.14e-10	4.25e-10
8		6.79e-09	4.43e-09	2.35e-09	1.46e-09	9.21e-10	7.70e-10
10		8.06e-09	5.24e-09	2.80e-09	1.74e-09	1.11e-09	9.35e-10
20		1.29e-08	8.20e-09	4.56e-09	2.94e-09	2.00e-09	1.72e-09
30		1.60e-08	9.93e-09	5.77e-09	3.90e-09	2.82e-09	2.45e-09
Committed effective dose		2.10e-08	1.24e-08	9.68e-09	1.01e-08	1.34e-08	1.36e-08

Table B-4. Cumulative Effective Dose Following Intake of ¹⁹²Ir (Sv/Bq)

Time post intake		Age					
d	h	3 mo	1 y	5 y	10 y	15 y	20 y
Inhalation: Type F							
	1	5.93e-11	3.77e-11	1.79e-11	1.18e-11	8.35e-12	6.71e-12
	2	9.73e-11	6.23e-11	2.90e-11	1.88e-11	1.23e-11	1.00e-11
	4	1.70e-10	1.12e-10	5.17e-11	3.32e-11	2.01e-11	1.67e-11
	8	3.46e-10	2.33e-10	1.07e-10	6.79e-11	3.84e-11	3.20e-11
	12	5.50e-10	3.73e-10	1.70e-10	1.07e-10	5.89e-11	4.92e-11
1	24	1.16e-09	7.89e-10	3.56e-10	2.24e-10	1.19e-10	9.97e-11
2		2.04e-09	1.40e-09	6.31e-10	3.93e-10	2.09e-10	1.75e-10
4		2.89e-09	1.99e-09	9.07e-10	5.59e-10	3.04e-10	2.55e-10
8		3.78e-09	2.61e-09	1.22e-09	7.39e-10	4.15e-10	3.49e-10
10		4.16e-09	2.88e-09	1.35e-09	8.16e-10	4.63e-10	3.90e-10
20		5.78e-09	4.04e-09	1.93e-09	1.15e-09	6.74e-10	5.70e-10
30		7.09e-09	5.01e-09	2.41e-09	1.43e-09	8.48e-10	7.19e-10
Committed effective dose		1.52e-08	1.14e-08	5.70e-09	3.32e-09	2.06e-09	1.76e-09
Inhalation: Type M							
	1	1.08e-10	7.05e-11	3.63e-11	2.52e-11	2.05e-11	1.60e-11
	2	1.96e-10	1.30e-10	6.77e-11	4.72e-11	3.80e-11	2.99e-11
	4	3.55e-10	2.43e-10	1.27e-10	8.87e-11	7.00e-11	5.55e-11
	8	7.10e-10	4.93e-10	2.55e-10	1.76e-10	1.32e-10	1.06e-10
	12	1.11e-09	7.69e-10	3.92e-10	2.69e-10	1.95e-10	1.57e-10
1	24	2.25e-09	1.57e-09	7.85e-10	5.35e-10	3.74e-10	3.01e-10
2		3.93e-09	2.75e-09	1.38e-09	9.43e-10	6.66e-10	5.33e-10
4		5.66e-09	4.03e-09	2.09e-09	1.45e-09	1.08e-09	8.63e-10
8		7.67e-09	5.57e-09	3.03e-09	2.15e-09	1.73e-09	1.37e-09
10		8.53e-09	6.23e-09	3.44e-09	2.45e-09	2.01e-09	1.59e-09
20		1.20e-08	8.94e-09	5.12e-09	3.68e-09	3.14e-09	2.49e-09
30		1.45e-08	1.09e-08	6.32e-09	4.55e-09	3.93e-09	3.11e-09
Committed effective dose		2.34e-08	1.83e-08	1.08e-08	7.60e-09	6.45e-09	5.22e-09
Inhalation: Type S							
	1	1.13e-10	7.41e-11	3.83e-11	2.67e-11	2.18e-11	1.71e-11
	2	2.07e-10	1.38e-10	7.20e-11	5.03e-11	4.08e-11	3.21e-11
	4	3.76e-10	2.57e-10	1.36e-10	9.49e-11	7.55e-11	5.97e-11
	8	7.50e-10	5.22e-10	2.71e-10	1.88e-10	1.43e-10	1.14e-10
	12	1.17e-09	8.13e-10	4.16e-10	2.86e-10	2.10e-10	1.68e-10
1	24	2.38e-09	1.66e-09	8.34e-10	5.69e-10	4.03e-10	3.23e-10
2		4.14e-09	2.91e-09	1.47e-09	1.01e-09	7.18e-10	5.74e-10
4		5.99e-09	4.27e-09	2.23e-09	1.55e-09	1.18e-09	9.35e-10
8		8.19e-09	5.96e-09	3.27e-09	2.33e-09	1.90e-09	1.50e-09
10		9.13e-09	6.69e-09	3.73e-09	2.67e-09	2.22e-09	1.75e-09
20		1.30e-08	9.76e-09	5.64e-09	4.08e-09	3.53e-09	2.79e-09
30		1.59e-08	1.21e-08	7.07e-09	5.12e-09	4.48e-09	3.55e-09
Committed effective dose		2.82e-08	2.25e-08	1.35e-08	9.51e-09	8.16e-09	6.62e-09
Ingestion							
	1	3.13e-10	1.82e-10	9.30e-11	5.57e-11	3.85e-11	3.06e-11
	2	4.93e-10	2.94e-10	1.52e-10	9.22e-11	6.26e-11	4.98e-11
	4	8.29e-10	5.19e-10	2.73e-10	1.67e-10	1.09e-10	8.71e-11
	8	1.70e-09	1.11e-09	5.86e-10	3.62e-10	2.26e-10	1.80e-10
	12	2.75e-09	1.82e-09	9.55e-10	5.91e-10	3.62e-10	2.89e-10
1	24	5.79e-09	3.87e-09	2.03e-09	1.26e-09	7.58e-10	6.05e-10
2		9.74e-09	6.53e-09	3.42e-09	2.12e-09	1.27e-09	1.02e-09
4		1.21e-08	8.15e-09	4.27e-09	2.65e-09	1.59e-09	1.27e-09
8		1.26e-08	8.43e-09	4.42e-09	2.74e-09	1.64e-09	1.31e-09
10		1.26e-08	8.44e-09	4.43e-09	2.74e-09	1.65e-09	1.31e-09
20		1.27e-08	8.48e-09	4.45e-09	2.76e-09	1.65e-09	1.32e-09
30		1.28e-08	8.52e-09	4.46e-09	2.77e-09	1.66e-09	1.33e-09
Committed effective dose		1.34e-08	8.74e-09	4.59e-09	2.85e-09	1.71e-09	1.37e-09

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