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DERIVED CONCENTRATION TECHNICAL STANDARD



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EXECUTIVE SUMMARY

Department of Energy (DOE) Standard DOE-STD-1196 is intended to support implementation of DOE radiation protection programs. This Standard (hereafter referred to as the “Standard”) contains DOE-approved derived concentration values (also referred to as DCS values) and effective dose coefficients that may be used in estimating doses, supporting pathway modeling, and comparing measurements to criteria provided in DOE Order (O) 458.1, *Radiation Protection of the Public and the Environment*, Chg 4, September 15, 2020. DOE O 458.1 invokes the Standard to provide DCS values for liquid effluents in comparison to established criteria for determining if Best Available Technology (BAT) evaluation processes is required if the DCS values are exceeded. The BAT process is completed to determine what treatment options are appropriate to comply with DOE O 458.1 requirements.

DCSs are radiological quantities, used in the development and conduct of environmental and public radiation protection programs implemented at DOE sites and for DOE activities. A DCS for exposure to a radionuclide in a specified environmental medium (e.g., air or water) represents the concentration of the radionuclide in that medium that would result in an effective dose of 1 millisievert (mSv) [100 millirem (mrem)] to a reference member of the population based on continuous exposure for one year (e.g., the concentration in water consumed over a year that would cause 1 mSv).

For each radionuclide and environmental medium addressed in this document, a “per capita” dose coefficient is provided for use in estimating a reference dose to the public for determining compliance with DOE dose limits and constraints. In the Standard, a “per capita” dose coefficient for a radionuclide and exposure mode is a weighted sum of age-specific effective dose coefficients, where the weight takes account of the fraction of each subgroup in the U.S. population, represented by an age-specific effective dose coefficient and the level of exposure to the radionuclide for that age group. The per capita dose coefficients may be useful in calculations supporting demonstrations of compliance with public dose limits without having to assess doses to individual age-specific categories. This concept is appropriate for assessing compliance with DOE’s public radiation protection limits because the system of protection is developed to protect the public from chronic exposures. The use of per capita dose coefficients in dose calculations provides confidence that reference persons are protected from lifetime exposures to radiation. The effective dose coefficients/effective dose rate coefficients for individual age-specific categories are provided for information and use, as needed.

The exposure scenarios addressed in the previous versions of the Standard (DOE-STD-1196-2011, *Derived Concentration Technical Standard* (Department of Energy, 2011)) were external exposure to airborne radionuclides (submersion in air), ingestion of radionuclides in water, and inhalation of airborne radionuclides. The values listed in that standard were based on:

- distribution of the U.S. population by age and sex as indicated by U.S. Census 2000 (U.S. Census Bureau, 2000);
- age-invariant effective dose coefficients for external exposure to airborne radionuclides tabulated in the Environmental Protection Agency (EPA) Federal Guidance Report (FGR) 12 (EPA, 1993);
- age-specific committed effective dose coefficients (previously known as Dose Conversion Factors) for internal emitters based on tissue weighting factors recommended in Publication 60 (1991) of the International Commission on Radiological

Protection (ICRP) and the ICRP's biokinetic and dosimetric models applied in FGR 13 (EPA, 1999) on cancer risk coefficients;

- age- and sex-specific usage of environmental media applied in FGR 13; and
- nuclear decay data from ICRP Publication 107 (2008).

Most of these components of DCS values and the dose coefficients for environmental radionuclides have been updated since the completion of DOE-STD-1196-2011. This revised standard provides updated DCS values and per capita dose coefficients that reflect the current state of knowledge and practice in radiation protection, as well as updated demographic data for the U.S. The exposure scenarios addressed in this updated standard are submersion in air, ingestion of water, ingestion of milk, and inhalation of air. These updated standards are based on:

- distribution of the U.S. population by age and sex as indicated by U.S. Census 2010 (U.S. Census Bureau, 2011);
- age-specific effective dose coefficients for external exposure to airborne radionuclides, from FGR 15 (EPA, 2019a);
- age-specific committed effective dose coefficients for inhalation and ingestion of radionuclides based on updated biokinetic and dosimetric models of the ICRP and tissue weighting factors recommended in ICRP Publication 103 (2007);
- separate per capita dose coefficients for ingestion of radionuclides for water and milk;
- reference age- and sex-specific usage of environmental media by the U.S. population based on recent compilations; and
- nuclear decay data from ICRP Publication 107 (2008).

For most situations, the per capita dose coefficients are sufficient for use in estimating doses to the maximally exposed individual or representative person necessary to demonstrate compliance with DOE O 458.1 dose limits or constraints. Age-specific dose coefficients are also provided for situations in which exposures can be characterized reasonably well for different age groups. As noted, annual dose limits for the public are protective for chronic long-term exposures. Individuals move through each age group over a lifetime, so DOE does not expect use of age-specific dose calculations to be required in most cases. One possible application would be the use of the adult dose coefficients when assessing worker exposures.

It is noted that some dose coefficients and DCSs have moderately significant changes as a result of the improved dosimetry and updated population distribution in the Standard; however, the changes do not require revision of past calculations nor reassessment of discharges. Although it is recommended that future calculations be done using the values in the Standard, retroactive application of the values for past calculations are not required for compliance with DOE requirements.

1. INTRODUCTION

A Derived Concentration Standard (DCS) is a radiological quantity used in the development and conduct of environmental and public radiation protection programs implemented at DOE sites and for DOE activities. DCS values are reference concentrations of radionuclides in environmental media that provide a basis for the control of effluent releases from DOE facilities. These DCS values may be used in implementation of the “as low as reasonably achievable” (ALARA) principle for environmental programs. The DCS values tabulated in the Standard, support the implementation of DOE O 458.1, Chg 4, *Radiation Protection of the Public and the Environment* (DOE, 2020).

In addition to the DCS values, Appendix A of this Standard includes effective dose coefficients that like the DCS values, are based on the most current science and recommendations of national and international advisory organizations. The dose coefficients are based on ICRP 103 and current EPA Federal guidance methods and are recommended (but not required) for use in calculation of doses to the maximally exposed individual (MEI) or representative person, for purposes of demonstrating compliance with DOE O 458.1. Although the dose coefficients are the most up-to-date available at the publication of this standard and may be useful in providing the best estimate of potential doses for various exposure situations, the use of these coefficients is not required (and in some cases not permitted) where use of other coefficients and associated weighting factors and methodology are approved or required by the Department such as in DOE’s 10 CFR Part 835 requirements for worker protection or standards supporting 10 CFR Part 830 nuclear safety requirements. Although the dose factors in this standard are based on more recent dosimetry methods, the changes do not require reassessments of any evaluations or modelling that was based on the 2011 version of the standard (or other DOE approved dose factors)."

The Standard is consistent with DOE Policy(P) 420.1, *Department Of Energy Nuclear Safety Policy, February 8, 2011*, and DOE P 450.4A, *Integrated Safety Management Policy*, chg1, Jan 18, 2018, and the Standard also reflects, as appropriate, recommendations and guidance from various national and international standards and scientific organizations, including the ICRP, the National Council on Radiation Protection and Measurements, and the American National Standards Institute.

DCS values were last published by DOE in 2011 in DOE-STD-1196-2011, *Derived Concentration Technical Standard* (DOE, 2011). The exposure scenarios addressed in that standard were external exposure to airborne radionuclides (submersion in air), ingestion of radionuclides in water, and inhalation of airborne radionuclides. DCS values for each of these exposure scenarios were based on best available radiation dosimetry models and demographic data. Effective dose coefficients for submersion in air were taken from FGR 12 (EPA, 1993), which addresses external exposure of a reference adult to radionuclides in various environmental media. Age-specific committed effective dose coefficients for ingestion or inhalation of radionuclides were based on tissue weighting factors listed in ICRP Publication 60 (1991), the ICRP’s biokinetic and dosimetric models applied in FGR 13 (EPA, 1999) on cancer risk coefficients, and the nuclear decay data from ICRP Publication 107 (2008).

Since the publication of DOE-STD-1196-2011, age-independent external dose coefficients have been developed and tabulated in EPA's FGR 15 (EPA, 2019). Also, the radiation protection framework on which age-specific effective dose coefficients for internal emitters are based has evolved. More sophisticated age-specific biokinetic and dosimetric models have been developed for use in upcoming ICRP reports. Along with the external dose coefficients of FGR 15, these updated data and models will be applied by the EPA in future FGR's, to develop an updated set of cancer risk coefficients for environmental exposure to radionuclides.

The purpose of this revised DOE Standard is to provide updated DCS values that reflect the current state of knowledge and practice in radiation protection, as well as updated environmental usage and demographic data for the U.S. The DCS values tabulated in this present document were derived from the age-specific effective dose coefficients for external exposure tabulated in FGR 15 (EPA, 2019a), age-specific effective dose coefficients for inhalation and ingestion for radionuclides based on the latest biokinetic and dosimetric models of the ICRP, tissue weighting factors provided in the latest primary guidance of the ICRP (Publication 103, 2007), the age distribution indicated by the 2010 U.S. census; and, as in DOE-STD-1196-2011, nuclear decay data from ICRP Publication 107 (2008).

In this updated Standard, members of the public are represented by six age groups as a starting place for derivation of DCS values: ages 0-1 year (up to but not including the first birthday), $1 \leq x < 3$ years, $3 \leq x < 7$ years, $7 \leq x < 12$ years, $12 \leq x < 17$ years, and ≥ 17 years (adults). The age-specific effective dose coefficients representing these six age groups are based on intake at each of six ages addressed in ICRP documents supporting ICRP publication 103 (2007), on doses to members of the public: age 100 days (infant), 1 year, 5 years, 10 years, 15 years, and adults, respectively. In the calculation of DCS values, the effective dose coefficients for each age group are weighted by their fractional representation in the U.S. 2010 population and by the reference age- and sex-specific usage of the environmental medium (e.g., age- and sex-specific air intake rates for the inhalation case). This procedure is described in Chapter 2. The single-value nature of the resultant DCS for a given radionuclide and exposure pathway and the fact that all DCS values are based on the same annual effective dose limit, allow these standards to be applied consistently in radiological environmental protection programs at DOE sites.

The DCS values presented in this Standard account for four discrete pathways of exposure to a radionuclide: ingestion of water, ingestion of milk, intake via inhalation, and external irradiation from airborne radionuclides (submersion in air). The Standard does not address all potentially important exposure pathways for members of the public living in the vicinity of DOE facilities. A more complete pathway analysis, such as described by Yu, et al. (2001), would be required for a comprehensive evaluation of radiation doses to members of the public from environmental releases of radionuclides.

1.1. DOSE QUANTITIES

The dosimetric system of ICRP Publication 103 (2007) and subsequent ICRP reports involves the three quantities defined below:

- a) **Absorbed dose.** Absorbed dose, D , is the basic physical dose quantity used in protection of workers or members of the public from ionizing radiation. It is defined as the mean energy imparted to a volume of material, divided by the mass of the volume.

The quantity is applicable to all types of ionizing radiations and to any material. The SI (Système Internationale or International System) unit is the gray (Gy) (J kg^{-1}). The conventional unit of absorbed dose is the rad ($1 \text{ Gy} = 100 \text{ rad}$).

- b) **Equivalent dose.** Equivalent dose, H_T , is a radiation protection quantity specific to an organ or tissue of the body. Equivalent dose is based on the mean absorbed dose in the volume of an organ or tissue, T , due to radiation of type R , modified by a radiation weighting factor (Table 1) for that radiation type, w_R . The w_R -modified absorbed dose due to each radiation type is summed (see glossary), and the resultant sum is called equivalent dose. The w_R -weighting is intended to place the various types of radiations on a common scale. The radiation weighting factors used in this Standard (Table 1) are those of ICRP Publication 103 (ICRP 2007). The SI unit of equivalent dose is the sievert (Sv) (J kg^{-1}). The conventional unit of equivalent dose is the rem ($1 \text{ Sv} = 100 \text{ rem}$).
- c) **Committed Equivalent Dose ($H_{T,50}$).** The equivalent dose calculated to be received by a tissue or organ over a 50-year period after the intake of a radionuclide by an adult or to age 70 years after intake by a pre-adult. It does not include contributions from radiation sources external to the body. Committed equivalent dose is expressed in the SI unit Sv (J kg^{-1}) or the conventional unit rem ($1 \text{ rem} = 0.01 \text{ Sv}$).
- d) **Effective dose.** The effective dose, E , is the primary radiation protection quantity used by the ICRP. It is a weighted sum of equivalent doses to radiosensitive tissues, with the tissue weighting factors, w_T , representing the relative contribution of the different tissues to the total risk for the idealized case of uniform irradiation of the whole body. The weighting factors are normalized to sum to 1.0. The tissue weighting factors (Table 2) used in this Standard are those recommended in ICRP Publication 103 (2007). The SI unit of effective dose is the Sv (J kg^{-1}). The conventional unit of effective dose is the rem ($1 \text{ Sv} = 100 \text{ rem}$).
- e) **Committed Effective Dose (E_{50}).** The sum of the committed equivalent doses to various tissues or organs in the body ($H_{T,50}$), each multiplied by the appropriate tissue weighting factor (w_T)--that is, $E_{50} = \sum w_T H_{T,50} + w_{\text{Remainder}} H_{\text{Remainder},50}$, where $w_{\text{Remainder}}$ is the tissue weighting factor assigned to the remainder organs and tissues and $H_{\text{Remainder},50}$ is the committed equivalent dose to the remainder organs and tissues. Committed effective dose is expressed in the SI unit of Sv (J kg^{-1}) or the conventional unit rem ($1 \text{ rem} = 0.01 \text{ Sv}$).
- f) **Per Capita Dose.** Per Capita dose, $E_{\text{per capita}}$, is the population weighted sum of age-specific effective dose coefficients, where the weight takes into account, the fraction of each subgroup in the U.S. population represented by an age-specific effective dose coefficient and the level of exposure to the radionuclide for that age group. Per capita dose is given by the expression:

$$E_{\text{per capita}} = \frac{1}{\sum_i (f_i^M U_i^M + f_i^F U_i^F)} \sum_i (f_i^M U_i^M + f_i^F U_i^F) e_i \quad (1)$$

where f_i^M and f_i^F are the fractions of the U.S. population (Table 3) in age group i for males and female, respectively; U_i^M and U_i^F are the daily intakes for age group i for males and females, respectively (Table 4); and e_i is the effective dose coefficients (i.e., effective dose rate coefficient for external dose and committed effective dose coefficient for internal dose) for the i^{th} reference age group. Per Capita dose follows new science and technology presented in the field of radiation dosimetry by national and international bodies. The SI unit of Per Capita dose is the Sv (J kg^{-1}). The conventional unit of per capita dose is the rem ($1 \text{ Sv} = 100 \text{ rem}$).

The tissue weighting factors provided in Table 2 are based on nominal risk coefficients for radiation-induced cancer and genetic effects, with consideration of life lost, lethality, and loss of quality of life. The factors are sex averaged and are used for assessment of effective dose for workers and members of the public. The effective dose for exposure at a given age is not specific to a real individual. Instead, it is based on reference biokinetic and/or dosimetric models and applies to a gender composite for the specific age.

Table 1. Radiation weighting factors, w_R (ICRP 2007)

Radiation type	Radiation weighting factor, w_R^a
Photons	1
Electrons and muons	1
Protons and charged pions	2
Alpha particles, fission fragments, heavy ions	20
Neutrons	A continuous function of neutron energy (see Fig. 1 and Eq. 4.3 of ICRP 2007)

^aAll values relate to the radiation incident on the body or, for internal radiation sources, emitted from the incorporated radionuclide(s).

Table 2. Tissue weighting factors, w_T (ICRP 2007)

Tissue/Organ	w_T	Σw_T
Gonads	0.08	0.08
Bone-marrow (red), Colon, Lung, Stomach, Breast, Remainder ^a	0.12	0.72
Bladder, Esophagus, Liver, Thyroid	0.04	0.16
Bone surface, Brain, Salivary glands, Skin	0.01	0.04
Total		1.00

^aRemainder: Adrenals, Extra-thoracic (ET) region, Gall bladder, Heart, Kidneys, Lymphatic nodes, Muscle, Oral mucosa, Pancreas, Prostate (male), Small intestine, Spleen, Thymus, Uterus/cervix (female).

1.2. REFERENCE INDIVIDUAL AND REFERENCE PERSON

The radiation protection quantities equivalent dose and effective dose are not measurable. Their values are derived by applying dose coefficients to measured or projected concentrations of radionuclides in the workplace or the environment. Such coefficients are established for Reference Individuals (e.g., Reference Adult Male), based on anatomical and physiological data. ICRP first tabulated such information for Standard Man in ICRP Publication 2 (ICRP 1960). The Standard Man concept was later expanded to include children and both sexes in the Reference Man concept of ICRP Publication 23 (ICRP 1975). More recently, the ICRP updated and expanded its collection of age- and sex-specific reference data in ICRP Publication 89 (ICRP 2002). ICRP Publication 89 summarizes typical anatomical and physiological attributes of male and female Reference Individuals of various ages. A Reference Individual, as applied in this report, is an idealized person of a specified age and sex with characteristics (e.g., height, weight, total-body mass, and tissues masses) defined in ICRP Publication 89, for the purpose of radiological protection. These reference data provide a common basis for the radiation protection community for development of age- and sex-specific dose coefficients. Because the effective dose quantity as defined in ICRP Publication 103 (2007) involves application of sex-averaged tissue weighting factors, the quantity is not applicable to Reference Individuals. Rather, it is applicable to a gender composite referred to as a Reference Person (ICRP 2007). The Reference Person is a hypothetical aggregation of human (male and female) physical and physiological characteristics arrived at by international consensus for the purpose of standardizing radiation dose calculations. For the most part, it is the standardized radiation dose calculations that are used to demonstrate compliance with radiation protection standards and dose limits.

2. METHODOLOGY

2.1. DERIVED CONCENTRATION STANDARDS FOR AIR, WATER, AND MILK

The DCS values tabulated in this Standard are derived from age-specific committed effective dose coefficients/effective dose rate coefficients coupled with information on the age and sex composition of the U.S. population, and age- and sex-specific usage of environmental media. The distribution of the U.S. population by age and sex is defined by U.S. Census 2010 (Table 3). The first column of Table 3 lists the reference ages for which dose coefficients were derived. The second column defines by age range the population subgroup to which these coefficients apply. The listed age ranges are the same as those applied in DOE-STD-1196-2011. The third and fourth columns list the fractions of males and females, respectively, of the U.S. population in each age group (U.S. Census, 2011). The last column lists the fractions of males plus females in each age group.

Table 3. Age and sex distribution of the 2010 U.S. population

Reference Age Group	Age x (years)	Population fraction		
		Male	Female	Total
Newborn	$0 \leq x < 1$	0.00652	0.00625	0.01277
1-y	$1 \leq x < 3$	0.01335	0.01280	0.02615
5-y	$3 \leq x < 7$	0.02698	0.02583	0.05281
10-y	$7 \leq x < 12$	0.03395	0.03249	0.06644
15-y	$12 \leq x < 17$	0.03477	0.03309	0.06786
Adult	$x \geq 17$	0.37604	0.39793	0.77397

Table 4 lists reference age- and sex-specific usage data for air, water, and milk applied in this report in the derivation of DCS values for these exposure pathways.

Table 4. Reference usage data

Reference Age Group	Age x (years)	Daily Intake					
		Air ^a (m ³)		Water ^b (L)		Milk ^c (L)	
		Male	Female	Male	Female	Male	Female
Newborn	$0 \leq x < 1$	3.7	3.7	0.549	0.549	0.710	0.710
1-y	$1 \leq x < 3$	6.0	6.0	0.348	0.348	0.577	0.577
5-y	$3 \leq x < 7$	8.8	8.8	0.413	0.413	0.308	0.308
10-y	$7 \leq x < 12$	15.2	15.2	0.555	0.555	0.288	0.288
15-y	$12 \leq x < 17$	20.1	15.8	0.855	0.641	0.303	0.227
Adult	$x \geq 17$	22.2	18.2	1.817	1.363	0.180	0.135

^aAge-specific air intake from ICRP Publication 89 (2002), p. 100.

^bIntakes for ages 0-1 y were based on average values listed in Table 3-12 of EPA 2019b for birth to 1 y. Intakes for ages 1-3 y were based on the sample size and average values listed in EPA 2019b for ages 1-2 y and 2-3 y. Intakes for ages 3-7 y, 7-12 y, 12-17 y and adult were based on mean values listed in EPA 2019b for ages 3-6 y, 7-11 y, 11-16 y, and 21-50 y, respectively. For ages 11 y and greater it was assumed that intake by females is 75% of intake by males.

^cIntake for ages 0-1 y were based on total milk intake listed in Table 3-43 of EPA 2019b, using average of intakes for ages 4-6 mo, 7-8 mo, and 9-11 mo. Intake for ages 1-3 y were based on total milk intake listed in Table 3-43 of EPA 2019b, using average of intakes for ages 12-14 mo, 15-18 mo, and 19-24 mo. Intake for ages 3-7 y, 7-12 y, 12-17 y, and >17 y were based on fluid milk intake listed in the U.S. Department of Agriculture (USDA 2019) *NHANES 2015-16, What We Eat in America*, for ages 2-5 y, 6-11 y, 12-19 y, and 20-49 y, respectively.

Age- and sex-specific values for air intake were based on reference air intake data tabulated in ICRP Publication 89 (2002, p. 100). The values for the first two age groups were extrapolated from reference values given for ages 3 months, 1 year, and 5 years. The values for age groups represented by ages 5 years, 10 years, 15 years, and adult are the reference values given in ICRP Publication 89 for each of those four age groups.

Age- and sex-specific usage values were not required for the derivation of DCS values for external irradiation from radionuclides in air (air submersion), as all subgroups of the population

were assumed to be exposed continually to the same constant concentration of the radionuclide in air.

The water intake data listed in Table 4 were based on values listed in EPA/600/R-18/259F (EPA 2019b), an update of Chapter 3 of the EPA Child-Specific Exposure Factors Handbook (2008). EPA/600/R-18/259F provides water ingestion values for several age groups in the U.S. population based on survey data from the National Health and Nutrition Examination Surveys (NHANES)¹, collected from 2005 through 2010. The water intake values were described in the NHANES report as water ingested directly as a beverage, plus water added in the preparation of food or beverage. The values were not divided by sex. For use in the present report, the updated EPA values for ages up to 11 years were assumed to be independent of sex. For higher ages, it was assumed that intake by females is 75% of intake by males, based on reference water balance data for adult males and females tabulated in ICRP Publication 89 (2002).

Age- and sex-specific values for intake of milk were based on values given for ages 0-2 years in EPA/600/R-18/259F (EPA 2019b), together with values for ages 2-50 years listed in *NHANES 2015-2016, What We Eat in America*. The values for milk intake listed in EPA/600/R-18/259F included human milk, cow's milk, goat's milk, soy milk, and infant formula. The values for milk intake listed in the NHANES 2015-2016 study were described as total fluid milk.

Age-specific committed effective dose coefficients were calculated using the Oak Ridge National Laboratory (ORNL) QCAL (Quality Assurance for DCAL) code for derivation of dose coefficients, the nuclear decay data of ICRP Publication 107 (ICRP 2008), and post-Publication 103 biokinetic and dosimetric models of the ICRP (to be published in upcoming ICRP documents). The same biokinetic and dosimetric models are being used in the development of revised Federal guidance for ingestion and inhalation of radionuclides. The age-specific committed effective dose coefficients and per capita dose coefficients for ingestion or inhalation of radionuclides used to derive the DCS values for intake of air, water, or milk are tabulated in Appendix A of the Standard.

2.2. CALCULATION OF DCS FOR WATER INGESTION

The DCS for water ingestion, DCS_{ing-w} , is computed as

$$DCS_{ing-w} = \frac{Ec}{t * Eper\ capita_{ing-w} * \sum_{i=1,6} (f_i^M U_{ing-w,i}^M + f_i^F U_{ing-w,i}^F)} \quad (2)$$

where Ec is the constraint on the annual effective dose of 100 mrem (1 mSv), $Eper\ capita_{ing-w}$ is the per capita dose coefficient for ingestion intakes of the radionuclide (Sv Bq⁻¹ ingested activity), f_i^M and f_i^F are the fractions of the U.S. population in age group i for males and female, respectively, and $U_{ing-w,i}^M$ and $U_{ing-w,i}^F$ are the daily intakes of water (L) by age group i for males and females, respectively. The duration of the intake, t , is 365 days. The fractions of the U.S. population and daily water intakes in each subgroup are given in Tables 3 and 4, respectively.

¹ National Health and Nutrition Examination Surveys (NHANES):
<https://www.cdc.gov/nchs/nhanes/index.htm>

The age-specific committed effective dose coefficients and per capita dose coefficients used in the calculations for water intake are given in Table A-1 of Appendix A.

2.3. CALCULATION OF DCS FOR MILK INGESTION

The DCS for ingestion of a radionuclide in milk, DCS_{ing-m} , is computed as

$$DCS_{ing-m} = \frac{Ec}{t * Eper\ capita_{ing-m} * \sum_{i=1,6} (f_i^M U_{ing-m,i}^M + f_i^F U_{ing-m,i}^F)} \quad (3)$$

where Ec is the constraint on the annual effective dose of 100 mrem (1 mSv), $Eper\ capita_{ing-m}$ is the committed effective dose coefficient for ingestion intakes of the radionuclide by age group i (Sv Bq⁻¹ ingested activity), f_i^M and f_i^F are the fractions of the U.S. population in age group i for males and female, respectively, and $U_{ing-m,i}^M$ and $U_{ing-m,i}^F$ are the daily intakes of milk (L) by age group i for males and females, respectively. The duration of the intake, t , is 365 days. The fraction of the U.S. population and daily milk intake in each subgroup are provided in Tables 3 and 4, respectively. The age-specific committed effective dose coefficients and per capita dose coefficients used in the calculations for milk intake are given in Table A-1 of Appendix A.

2.4. CALCULATION OF DCS FOR INHALATION

The DCS for inhalation, DCS_{inh} , is computed as

$$DCS_{inh} = \frac{Ec}{t * Eper\ capita_{inh} * \sum_{i=1,6} (f_i^M U_{inh,i}^M + f_i^F U_{inh,i}^F)} \quad (4)$$

where Ec is the constraint on the annual effective dose of 100 mrem (1 mSv), $Eper\ capita_{inh}$ is the per capita dose coefficient for inhalation of the radionuclide (Sv Bq⁻¹ inhaled activity), f_i^M and f_i^F are the fractions of the U.S. population in age group i for males and female, respectively, and $U_{inh,i}^M$ and $U_{inh,i}^F$ are the daily intakes of air (m³) by age group i for males and females, respectively. The duration of the intake, t , is 365 days. The fraction of the U.S. population and daily air intakes in each subgroup are provided in Tables 3 and 4, respectively. The age-specific committed effective dose coefficients and per capita dose coefficients used in the calculations for inhaled radionuclides are given in Table A-2 for particulate aerosols and Table A-3 for common gaseous and vapor forms of selected radionuclides.

The committed effective dose coefficients and per capita dose coefficients for inhalation of radionuclides in particulate form by members of the public are based on an assumed activity median aerodynamic diameter (AMAD) of 1 micron (µm), the ICRP's reference particle size for inhalation of particulate material by members of the public (ICRP, 1995). Table 5 lists the absorption types addressed for particulate aerosols and the recommended default absorption type for application in the absence of specific information.

If specific information on the form of an inhaled radionuclide is lacking, the most restrictive DCS among the different forms of the inhaled radionuclide should be applied.

Table 5: Classification of absorption types for particulates

Element	Lung absorption Type(s) ^(a)	Element	Lung absorption Type(s) ^(a)	Element	Lung absorption Type(s) ^(a)
Hydrogen	F, M ^(b) , S	Zirconium	F, M ^(b) , S	Lutetium	F, M ^(b) , S
Beryllium	F, M ^(b) , S	Niobium	F, M ^(b) , S	Hafnium	F, M ^(b) , S
Carbon	F, M ^(b) , S	Molybdenum	F, M ^(b) , S	Tantalum	F, M ^(b) , S
Fluorine	F ^(b) , M, S	Technetium	F, M ^(b) , S	Tungsten	F, M ^(b) , S
Sodium	F, M ^(b) , S	Ruthenium	F, M ^(b) , S	Rhenium	F, M ^(b) , S
Magnesium	F, M ^(b) , S	Rhodium	F, M ^(b) , S	Osmium	F, M ^(b) , S
Aluminum	F, M, S ^(b)	Palladium	F, M ^(b) , S	Iridium	F, M ^(b) , S
Silicon	F, M ^(b) , S	Silver	F, M ^(b) , S	Platinum	F, M ^(b) , S
Phosphorus	F, M ^(b) , S	Cadmium	F, M ^(b) , S	Gold	F, M ^(b) , S
Sulfur	F, M ^(b) , S	Indium	F, M ^(b) , S	Mercury	F, M ^(b) , S
Chlorine	F ^(b) , M, S	Tin	F, M ^(b) , S	Thallium	F, M ^(b) , S
Potassium	F, M ^(b) , S	Antimony	F, M ^(b) , S	Lead	F ^(b) , M, S
Calcium	F, M ^(b) , S	Tellurium	F, M ^(b) , S	Bismuth	F, M ^(b) , S
Scandium	F, M ^(b) , S	Iodine	F ^(b) , M, S	Polonium	F, M ^(b) , S
Titanium	F, M ^(b) , S	Cesium	F, M ^(b) , S	Astatine	F ^(b) , M, S
Vanadium	F, M ^(b) , S	Barium	F, M ^(b) , S	Francium	F, M ^(b) , S
Chromium	F, M ^(b) , S	Lanthanum	F, M ^(b) , S	Radium	F, M ^(b) , S
Manganese	F, M ^(b) , S	Cerium	F, M ^(b) , S	Actinium	F, M ^(b) , S
Iron	F, M ^(b) , S	Praseodymium	F, M ^(b) , S	Thorium	F, M, S ^(b)
Cobalt	F, M ^(b) , S	Neodymium	F, M ^(b) , S	Protactinium	F, M, S ^(b)
Nickel	F, M ^(b) , S	Promethium	F, M ^(b) , S	Uranium	F, M ^(b) , S
Copper	F, M ^(b) , S	Samarium	F, M ^(b) , S	Neptunium	F, M ^(b) , S
Zinc	F, M ^(b) , S	Europium	F, M ^(b) , S	Plutonium	F, M ^(b) , S
Gallium	F, M ^(b) , S	Gadolinium	F, M ^(b) , S	Americium	F, M ^(b) , S
Germanium	F, M ^(b) , S	Terbium	F, M ^(b) , S	Curium	F, M ^(b) , S
Arsenic	F, M ^(b) , S	Dysprosium	F, M ^(b) , S	Berkelium	F, M ^(b) , S
Selenium	F, M ^(b) , S	Holmium	F, M ^(b) , S	Californium	F, M ^(b) , S
Bromine	F ^(b) , M, S	Erbium	F, M ^(b) , S	Einsteinium	F, M ^(b) , S
Rubidium	F, M ^(b) , S	Thulium	F, M ^(b) , S	Fermium	F, M ^(b) , S
Strontium	F, M ^(b) , S	Ytterbium	F, M ^(b) , S		
Yttrium	F, M ^(b) , S				

(a) Absorption types defined in ICRP Publication 66 (1994a); F is fast, M is moderate, and S is slow absorption.

(b) Recommended default absorption type when no specific information is available (ICRP 1995b, 1996).

2.5. CALCULATION OF DCS FOR AIR SUBMERSION

The air submersion DCS, DCS_{subm} , for a given radionuclide is calculated as

$$DCS_{subm} = \frac{E_c}{t * E_{per\ capita-ext}} \quad (5)$$

where E_c is the constraint on the annual effective dose of 100 mrem (1 mSv), $E_{per\ capita\ ext}$ is the per capita effective dose rate coefficient for external exposure ($Sv\ m^3\ Bq^{-1}\ s^{-1}$), and the duration of the exposure, t , is 1 year. The calculation assumes continuous, unshielded exposure via submersion in a semi-infinite atmospheric cloud containing the uniformly distributed radionuclide. For a given radionuclide, the per capita dose rate coefficient used to calculate the DCS value for air submersion was derived as a weighted sum of the age-specific external dose rate coefficients for air submersion listed in Federal Guidance Report 15 (EPA, 2019). The effective dose rate coefficients tabulated in Federal Guidance Report 15 were based on age-specific dosimetric phantoms and radiation types, energies, and intensities from ICRP Publication 107 (ICRP 2008). The following ages at exposure were addressed in Federal Guidance Report 15: newborn, age 1 y, age 5 y, age 10 y, age 15 y, and adult. The weights applied to the age-specific external effective dose rate coefficients were the fractions of the total population associated with a given reference age (Table 3). Age-specific effective dose rate coefficients and per capita dose rate coefficients for external exposure to individual radionuclides in air are given in Table A-4 of Appendix A.

3. RESULTS

Changes in the DCS values from DOE-STD-1196-2011, result from the following modifications of the earlier methodology:

- updates of the ICRP's biokinetic and dosimetric models used to calculate dose coefficients for internal emitters.
- replacement of age-independent effective dose rate coefficients from Federal Guidance 12 (EPA, 1993) with age-specific effective dose rate coefficients of Federal Guidance Report 15 (EPA, 2019).
- replacement of the effective dose as defined in ICRP Publication 60 (1991) with the effective dose as defined in ICRP Publication 103 (2007);
- replacement of reference age- and sex-specific environmental usage values for water with values based on more recent data; and
- replacement of the age and sex distribution defined by the U.S. Census 2000, with the distribution defined by U.S. Census 2010.

The modifications provided above support the implementation of the current state of knowledge and technology related to radiation protection of the public and the environment. The Standard provides DCS values and effective dose coefficients to meet the requirements of DOE O 458.1, as well as to align with the safety objectives promoted by DOE P 420.1 (DOE 2011), and DOE P 450.4A (DOE 2018). DCS values are provided to allow for the comparison of concentrations that result from effluent releases from DOE Facilities to determine if there is a need to implement BAT to reduce the concentration of radionuclides within the effluent release at each

DOE Site and therefore reduce dose exposure to the public. The Standard also provides the dose coefficients that may be used to demonstrate compliance with the requirements and objectives presented in DOE O 458.1, for the proper protection of the Public and the Environment.

DCS values for intake of radionuclides in water and milk are presented in Table 6. DCS values for inhalation of radionuclides in particulate form are listed in Table 7. DCS values for radionuclides inhaled in gaseous or vapor form are given in Table 8. DCS values for external exposure to radionuclides in air (air submersion) are given in Table 9. All DCS values are based on a limiting annual effective dose of 1 mSv (100 mrem).

DCS values for ingestion of water and milk are provided for each chemical form, represented by the f_A value (gastrointestinal absorption fraction). For radionuclides with multiple f_A values, the chemical forms associated with the f_A values are listed following the data for the radioisotopes of the element. If specific information on the chemical form (applicable, f_A) is lacking, then the most restrictive DCS for ingestion of a radionuclide in water and milk should be used.

Inhalation DCS values are tabulated in Table 7 for intake of particulate aerosols in three different physiochemical forms, referred to as Absorption Types F, M, and S (ICRP, 1994, 2015). Radionuclides associated with particulate material of Type F undergo fast dissolution in the respiratory tract and show a high rate and level of absorption to blood. Type M represents an intermediate rate of dissolution in the respiratory tract and an intermediate rate and level of absorption to blood. Type S represents slow dissolution in the respiratory tract and a low rate and level of absorption to blood.

For selected gaseous or vapor forms Inhalation, DCS values are tabulated in Table 8 for several radionuclides. These include some of the most frequently encountered radioactive gases or vapors at DOE facilities, e.g., ^3H as tritiated water or ^{14}C as carbon dioxide.

DCS values for inhalation or ingestion are provided for those radionuclides addressed in ICRP Publication 107 (2008) with radiological half-life greater than 10 minutes, representing about three-fourths of the 1,252 radionuclides addressed in Publication 107. If radionuclide X heads a chain of radionuclides, the committed dose coefficient for X used to calculate a DCS for inhalation or ingestion of X reflects the contribution to the dose of any radioactive progeny formed within the body after intake of X, without regard to the physical half-life of the progeny.

The DCS values in the tabulations are given to two significant figures. This level of precision is provided to minimize numerical errors as the tabulated values are converted to different units or used in further calculations. The result of any numerical calculations involving DCS values should be rounded, at the end of the computations, to a single significant figure following conventional numerical rounding procedures.

DCS values for air submersion (Table 9) are provided for each of the 1,252 radionuclides addressed in ICRP Publication 107 (2008), regardless of the radiological half-life. These values account for decay of the listed radionuclide only; contributions from radioactive progeny are not included and therefore, if significant must be evaluated separately. For example, the DCS value for Cs-137 does not include emissions of its short-lived progeny Ba-137m, so its contribution would have to be considered separately.

4. DISCUSSION

4.1. INTENDED USES OF DCS VALUES

The DCS values tabulated in the Standard are intended to provide guidance for the design and conduct of radiological environmental protection programs at DOE facilities and sites. Use of the DCS values for water, DCS_{ing-w} , is directed in DOE Order 458.1, in establishing criteria for use of best available technology (BAT) for liquid effluent streams. The DCS values for ingestion of milk, DCS_{ing-m} , inhalation of air, DCS_{inh} , and air submersion, DCS_{subm} , while not required by the Order, are presented here for completeness and possible use in ALARA considerations and off-site dose estimates, where appropriate. In summary, the intended applications are as follows:

- Defining criteria for applying BAT at point of discharge for liquid effluent streams (DOE O 458.1);
- Relative ranking of the importance of radionuclides within a waste stream; and
- Relative ranking of multiple effluent streams to air or water.

4.2. APPLICATION TO MIXTURES OF RADIONUCLIDES

DCS values are given in this Standard for individual radionuclides. For known mixtures of radionuclides, the sum of the ratios of the concentration C of each radionuclide n to its corresponding DCS must not exceed 1.0, i.e.,

$$\sum_n \frac{C(n)}{DCS(n)} \leq 1.0 \quad (6)$$

4.3. LIMITATIONS

The DCS values are developed with consideration of the following exposure modes: ingestion of water, ingestion of milk, inhalation of air, and external exposure from air submersion. While the tabulated values provide relative guidance for the ranking of potential radionuclides in effluent streams released from facilities, they are not intended to be used to infer the dose to members of the public, nor to demonstrate compliance with DOE radiation protection dose limits. The DCS values represent concentrations at the point of discharge and do not account for attenuation along the pathway before reaching the receptor. Typically, more complex environmental pathways are involved. A detailed pathway analysis is required for calculating public radiation doses resulting from DOE activities. Often such pathway analysis, such as described by Yu *et al.* (2001), is required by the legally applicable rules and regulations of other Federal, State, and local agencies for which DOE activities are conducted. Although DCS values may be used in assessing the magnitude of dose to the public, they are not recommended for use in public dose estimates as they likely produce doses that are overly conservative.

5. CONCLUSIONS

The Standard serves to protect the public from radiological hazards from operations at DOE, and is invoked by DOE O 458.1 as a complementary document to determine the need to apply Best Available Technology (BAT) at the point of discharge from DOE facilities: The Standard is also consistent with DOE P 420.1, *Department Of Energy Nuclear Safety Policy, February 8,*

2011, and DOE P 450.4A, *Integrated Safety Management Policy*, April 25 2011. The Standard provides DCS values based on current radiation protection practices for controlling exposure to members of the public. The DCS values are based on the effective dose quantity used currently in radiation protection. This approach enabled consideration of age and sex attributes for the population subgroups while resulting in a single-valued quantity suitable for DOE's regulatory framework. This single-valued DCS quantity for a given radionuclide and exposure pathway can be effectively and consistently applied to the design and implementation of radiological environmental protection programs for DOE radiological activities throughout the DOE Complex.

Table 6. Derived concentration standards for members of the public for ingested water and milk

	Ingested water, DCS		Ingested milk, DCS	
Nuclide	(Bq/L)	(μCi/mL)	(Bq/L)	(μCi/mL)
Hydrogen				
H-3	9.7e+04 ^(a)	2.6e-03	4.5e+05	1.2e-02
H-3	3.8e+04 ^(b)	1.0e-03	2.0e+05	5.3e-03
	(a) Tritiated Water			
	(b) Organic Bound Tritium			
Beryllium				
Be-7	9.4e+04	2.5e-03	4.6e+05	1.2e-02
Be-10	4.4e+03	1.2e-04	2.1e+04	5.6e-04
Carbon				
C-11	6.6e+04 ^(a)	1.8e-03	2.9e+05	7.8e-03
	6.8e+04 ^(b)	1.8e-03	3.0e+05	8.1e-03
C-14	1.2e+04 ^(a)	3.3e-04	6.5e+04	1.8e-03
	1.5e+05 ^(b)	4.0e-03	7.3e+05	2.0e-02
	(a) Generic			
	(b) Bicarbonate			
Fluorine				
F-18	3.8e+04	1.0e-03	1.7e+05	4.5e-03
Sodium				
Na-22	5.8e+02	1.6e-05	3.6e+03	9.7e-05
Na-24	3.9e+03	1.0e-04	1.7e+04	4.6e-04
Magnesium				
Mg-28	1.8e+03	4.9e-05	7.5e+03	2.0e-04
Aluminum				
Al-26	1.4e+03	3.8e-05	6.5e+03	1.8e-04
Silicon				
Si-31	1.8e+04	5.0e-04	7.7e+04	2.1e-03
Si-32	2.1e+03	5.8e-05	5.4e+03	1.5e-04
Phosphorus				
P-32	9.6e+02	2.6e-05	3.1e+03	8.5e-05
P-33	6.4e+03	1.7e-04	2.2e+04	5.9e-04
Sulfur				
S-35	6.9e+04 ^(a)	1.9e-03	3.0e+05	8.0e-03
	1.6e+03 ^(b)	4.2e-05	5.9e+03	1.6e-04
S-38	4.7e+03 ^(a)	1.3e-04	2.1e+04	5.6e-04
	4.7e+03 ^(b)	1.3e-04	2.0e+04	5.5e-04
	(a) Inorganic Sulfur			
	(b) Organic Sulfur			
Chlorine				
Cl-34m	1.4e+04	3.8e-04	6.1e+04	1.7e-03
Cl-36	1.8e+03	4.8e-05	6.5e+03	1.7e-04
Cl-38	1.2e+04	3.3e-04	5.4e+04	1.5e-03
Cl-39	1.7e+04	4.6e-04	7.3e+04	2.0e-03

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Potassium				
K-40	5.9e+02	1.6e-05	2.9e+03	7.9e-05
K-42	4.2e+03	1.1e-04	1.6e+04	4.4e-04
K-43	8.6e+03	2.3e-04	3.4e+04	9.1e-04
K-44	1.7e+04	4.7e-04	7.7e+04	2.1e-03
K-45	3.0e+04	8.0e-04	1.3e+05	3.5e-03
Calcium				
Ca-41	2.9e+05	7.8e-03	8.7e+05	2.4e-02
Ca-45	5.4e+03	1.5e-04	1.3e+04	3.6e-04
Ca-47	2.5e+03	6.9e-05	9.5e+03	2.6e-04
Scandium				
Sc-43	1.4e+04	3.8e-04	6.4e+04	1.7e-03
Sc-44	8.0e+03	2.2e-04	3.7e+04	9.9e-04
Sc-44m	2.3e+03	6.2e-05	1.1e+04	2.9e-04
Sc-46	2.5e+03	6.7e-05	1.1e+04	3.0e-04
Sc-47	2.8e+04	7.5e-04	1.2e+05	3.4e-03
Sc-48	2.1e+03	5.7e-05	1.0e+04	2.8e-04
Sc-49	2.0e+04	5.5e-04	8.6e+04	2.3e-03
Titanium				
Ti-44	5.9e+02	1.6e-05	2.6e+03	7.0e-05
Ti-45	1.9e+04	5.0e-04	8.3e+04	2.2e-03
Vanadium				
V-47	2.4e+04	6.6e-04	1.1e+05	2.9e-03
V-48	1.8e+03	4.7e-05	8.5e+03	2.3e-04
V-49	5.2e+06	1.4e-01	1.5e+07	4.0e-01
V-50	3.6e+03	9.8e-05	1.8e+04	4.8e-04
Chromium				
Cr-48	1.6e+04	4.2e-04	7.5e+04	2.0e-03
Cr-49	2.7e+04	7.2e-04	1.2e+05	3.2e-03
Cr-51	1.4e+05	3.8e-03	6.3e+05	1.7e-02
Manganese				
Mn-51	1.7e+04	4.6e-04	7.4e+04	2.0e-03
Mn-52	1.5e+03	4.1e-05	7.0e+03	1.9e-04
Mn-52m	2.1e+04	5.8e-04	9.5e+04	2.6e-03
Mn-53	4.4e+05	1.2e-02	8.9e+05	2.4e-02
Mn-54	3.6e+03	9.8e-05	1.4e+04	3.7e-04
Mn-56	9.3e+03	2.5e-04	4.1e+04	1.1e-03
Iron				
Fe-52	2.9e+03	7.9e-05	1.3e+04	3.4e-04
Fe-55	5.4e+03	1.5e-04	1.6e+04	4.4e-04
Fe-59	8.9e+02	2.4e-05	2.4e+03	6.5e-05
Fe-60	6.9e+01	1.9e-06	2.9e+02	7.9e-06
Cobalt				
Co-55	3.9e+03	1.0e-04	1.8e+04	4.9e-04
Co-56	9.5e+02	2.6e-05	3.6e+03	9.7e-05
Co-57	1.4e+04	3.7e-04	4.4e+04	1.2e-03
Co-58	3.3e+03	8.9e-05	1.2e+04	3.3e-04
Co-58m	6.5e+05	1.8e-02	2.1e+06	5.8e-02

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Co-60	5.3e+02	1.4e-05	1.9e+03	5.1e-05
Co-60m	2.1e+07	5.8e-01	9.0e+07	2.4e+00
Co-61	2.9e+04	7.9e-04	1.2e+05	3.3e-03
Co-62m	3.0e+04	8.2e-04	1.3e+05	3.6e-03
Nickel				
Ni-56	3.2e+03	8.5e-05	1.5e+04	4.1e-04
Ni-57	3.9e+03	1.1e-04	1.9e+04	5.1e-04
Ni-59	1.3e+05	3.5e-03	3.0e+05	8.1e-03
Ni-63	4.9e+04	1.3e-03	1.1e+05	3.0e-03
Ni-65	1.5e+04	4.1e-04	6.6e+04	1.8e-03
Ni-66	2.8e+03	7.7e-05	1.2e+04	3.3e-04
Copper				
Cu-60	2.1e+04	5.8e-04	9.5e+04	2.6e-03
Cu-61	2.0e+04	5.3e-04	8.7e+04	2.3e-03
Cu-64	3.2e+04	8.6e-04	1.4e+05	3.7e-03
Cu-67	1.3e+04	3.4e-04	4.9e+04	1.3e-03
Zinc				
Zn-62	3.4e+03	9.2e-05	1.5e+04	4.0e-04
Zn-63	1.9e+04	5.1e-04	8.3e+04	2.2e-03
Zn-65	4.3e+02	1.2e-05	1.7e+03	4.7e-05
Zn-69	6.1e+04	1.6e-03	2.5e+05	6.9e-03
Zn-69m	1.3e+04	3.4e-04	5.3e+04	1.4e-03
Zn-71m	9.8e+03	2.7e-04	4.4e+04	1.2e-03
Zn-72	1.9e+03	5.0e-05	7.8e+03	2.1e-04
Gallium				
Ga-65	4.1e+04	1.1e-03	1.8e+05	4.9e-03
Ga-66	3.3e+03	9.0e-05	1.5e+04	4.0e-04
Ga-67	3.5e+04	9.4e-04	1.7e+05	4.5e-03
Ga-68	1.7e+04	4.7e-04	7.5e+04	2.0e-03
Ga-70	4.8e+04	1.3e-03	2.0e+05	5.5e-03
Ga-72	3.6e+03	9.6e-05	1.7e+04	4.5e-04
Ga-73	1.7e+04	4.5e-04	7.2e+04	2.0e-03
Germanium				
Ge-66	1.8e+04	4.8e-04	7.7e+04	2.1e-03
Ge-67	2.4e+04	6.5e-04	1.1e+05	2.8e-03
Ge-68	2.3e+03	6.3e-05	9.4e+03	2.5e-04
Ge-69	1.1e+04	3.0e-04	4.8e+04	1.3e-03
Ge-71	3.9e+05	1.0e-02	1.4e+06	3.8e-02
Ge-75	3.4e+04	9.3e-04	1.4e+05	3.9e-03
Ge-77	6.6e+03	1.8e-04	2.8e+04	7.4e-04
Ge-78	1.5e+04	4.0e-04	6.3e+04	1.7e-03
Arsenic				
As-69	2.7e+04	7.4e-04	1.2e+05	3.2e-03
As-70	1.2e+04	3.3e-04	5.4e+04	1.4e-03
As-71	8.8e+03	2.4e-04	3.8e+04	1.0e-03
As-72	2.6e+03	7.1e-05	1.1e+04	3.0e-04
As-73	1.4e+04	3.7e-04	5.0e+04	1.3e-03
As-74	2.4e+03	6.5e-05	1.0e+04	2.7e-04

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
As-76	3.4e+03	9.1e-05	1.4e+04	3.8e-04
As-77	1.6e+04	4.3e-04	6.0e+04	1.6e-03
As-78	8.7e+03	2.4e-04	3.8e+04	1.0e-03
Selenium				
Se-70	1.7e+04	4.6e-04	7.6e+04	2.0e-03
Se-72	4.5e+02	1.2e-05	1.6e+03	4.2e-05
Se-73	9.7e+03	2.6e-04	3.9e+04	1.0e-03
Se-73m	6.7e+04	1.8e-03	2.8e+05	7.5e-03
Se-75	7.3e+02	2.0e-05	3.1e+03	8.4e-05
Se-79	8.2e+02	2.2e-05	2.5e+03	6.7e-05
Se-81	5.5e+04	1.5e-03	2.3e+05	6.3e-03
Se-81m	3.4e+04	9.2e-04	1.4e+05	3.7e-03
Se-83	3.7e+04	1.0e-03	1.7e+05	4.5e-03
Bromine				
Br-74	1.8e+04	4.9e-04	8.1e+04	2.2e-03
Br-74m	1.1e+04	2.9e-04	4.8e+04	1.3e-03
Br-75	1.9e+04	5.0e-04	8.0e+04	2.2e-03
Br-76	4.0e+03	1.1e-04	1.7e+04	4.7e-04
Br-77	2.1e+04	5.8e-04	9.6e+04	2.6e-03
Br-80	4.6e+04	1.3e-03	2.0e+05	5.4e-03
Br-80m	1.4e+04	3.8e-04	5.8e+04	1.6e-03
Br-82	3.8e+03	1.0e-04	1.7e+04	4.5e-04
Br-83	3.8e+04	1.0e-03	1.6e+05	4.2e-03
Br-84	1.6e+04	4.4e-04	7.2e+04	1.9e-03
Rubidium				
Rb-78	2.1e+04	5.6e-04	9.3e+04	2.5e-03
Rb-79	3.0e+04	8.1e-04	1.3e+05	3.6e-03
Rb-81	3.5e+04	9.4e-04	1.5e+05	4.0e-03
Rb-81m	3.4e+05	9.1e-03	1.4e+06	3.8e-02
Rb-82m	1.3e+04	3.4e-04	5.8e+04	1.6e-03
Rb-83	1.2e+03	3.2e-05	6.7e+03	1.8e-04
Rb-84	8.0e+02	2.2e-05	3.9e+03	1.1e-04
Rb-84m	2.8e+05	7.5e-03	1.3e+06	3.4e-02
Rb-86	1.0e+03	2.7e-05	3.9e+03	1.0e-04
Rb-87	2.1e+03	5.7e-05	9.7e+03	2.6e-04
Rb-88	1.6e+04	4.3e-04	7.0e+04	1.9e-03
Rb-89	3.3e+04	9.0e-04	1.5e+05	3.9e-03
Strontium				
Sr-80	5.1e+03	1.4e-04	2.2e+04	6.0e-04
Sr-81	2.4e+04	6.5e-04	1.1e+05	2.9e-03
Sr-82	6.4e+02	1.7e-05	1.7e+03	4.7e-05
Sr-83	7.5e+03	2.0e-04	3.4e+04	9.1e-04
Sr-85	4.2e+03	1.1e-04	1.3e+04	3.6e-04
Sr-85m	3.8e+05	1.0e-02	1.8e+06	4.9e-02
Sr-87m	8.1e+04	2.2e-03	3.7e+05	9.9e-03
Sr-89	1.4e+03	3.9e-05	3.2e+03	8.6e-05
Sr-90	6.2e+01	1.7e-06	2.1e+02	5.8e-06
Sr-91	6.0e+03	1.6e-04	2.5e+04	6.7e-04

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Sr-92	1.1e+04	2.8e-04	4.6e+04	1.2e-03
Yttrium				
Y-84m	1.2e+04	3.1e-04	5.2e+04	1.4e-03
Y-85	1.4e+04	3.7e-04	6.1e+04	1.7e-03
Y-85m	8.6e+03	2.3e-04	3.9e+04	1.0e-03
Y-86	3.1e+03	8.4e-05	1.5e+04	4.0e-04
Y-86m	5.4e+04	1.5e-03	2.6e+05	7.0e-03
Y-87	7.2e+03	1.9e-04	3.4e+04	9.2e-04
Y-87m	2.0e+04	5.4e-04	9.2e+04	2.5e-03
Y-88	2.1e+03	5.6e-05	1.0e+04	2.7e-04
Y-90	3.3e+03	8.8e-05	1.4e+04	3.9e-04
Y-90m	3.2e+04	8.7e-04	1.5e+05	4.0e-03
Y-91	4.6e+03	1.2e-04	2.0e+04	5.5e-04
Y-91m	1.7e+05	4.7e-03	8.3e+05	2.2e-02
Y-92	6.0e+03	1.6e-04	2.6e+04	6.9e-04
Y-93	4.7e+03	1.3e-04	2.0e+04	5.4e-04
Y-94	1.7e+04	4.6e-04	7.5e+04	2.0e-03
Y-95	3.4e+04	9.3e-04	1.5e+05	4.1e-03
Zirconium				
Zr-86	4.1e+03	1.1e-04	1.9e+04	5.2e-04
Zr-87	1.2e+04	3.2e-04	5.2e+04	1.4e-03
Zr-88	4.5e+03	1.2e-04	2.1e+04	5.7e-04
Zr-89	4.7e+03	1.3e-04	2.2e+04	6.0e-04
Zr-93	7.9e+03	2.1e-04	4.7e+04	1.3e-03
Zr-95	4.4e+03	1.2e-04	1.9e+04	5.3e-04
Zr-97	2.9e+03	7.9e-05	1.3e+04	3.6e-04
Niobium				
Nb-88	2.1e+04	5.7e-04	9.5e+04	2.6e-03
Nb-89	8.2e+03	2.2e-04	3.6e+04	9.8e-04
Nb-89m	1.3e+04	3.6e-04	5.9e+04	1.6e-03
Nb-90	2.7e+03	7.3e-05	1.3e+04	3.5e-04
Nb-91	5.8e+04	1.6e-03	2.6e+05	7.1e-03
Nb-91m	5.7e+04	1.5e-03	2.1e+05	5.6e-03
Nb-92	1.0e+03	2.7e-05	6.5e+03	1.8e-04
Nb-92m	5.4e+03	1.5e-04	2.6e+04	7.0e-04
Nb-93m	7.1e+04	1.9e-03	3.5e+05	9.5e-03
Nb-94	8.8e+02	2.4e-05	5.5e+03	1.5e-04
Nb-95	6.2e+03	1.7e-04	3.0e+04	8.1e-04
Nb-95m	2.5e+04	6.7e-04	1.1e+05	2.9e-03
Nb-96	3.4e+03	9.1e-05	1.6e+04	4.3e-04
Nb-97	2.8e+04	7.5e-04	1.2e+05	3.3e-03
Nb-98m	1.6e+04	4.2e-04	7.0e+04	1.9e-03
Molybdenum				
Mo-90	7.2e+03	1.9e-04	3.3e+04	8.8e-04
Mo-91	2.4e+04	6.4e-04	1.0e+05	2.8e-03
Mo-93	9.1e+03	2.5e-04	3.8e+04	1.0e-03
Mo-93m	1.1e+04	3.0e-04	5.3e+04	1.4e-03
Mo-99	4.2e+03	1.1e-04	1.7e+04	4.7e-04

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Mo-101	3.8e+04	1.0e-03	1.6e+05	4.5e-03
Mo-102	2.1e+04	5.7e-04	9.1e+04	2.5e-03
Technetium				
Tc-93	3.0e+04	8.2e-04	1.4e+05	3.8e-03
Tc-93m	6.1e+04	1.7e-03	2.8e+05	7.5e-03
Tc-94	1.1e+04	2.9e-04	5.1e+04	1.4e-03
Tc-94m	1.6e+04	4.4e-04	7.1e+04	1.9e-03
Tc-95	1.3e+04	3.4e-04	5.9e+04	1.6e-03
Tc-95m	5.4e+03	1.5e-04	2.4e+04	6.4e-04
Tc-96	2.2e+03	6.0e-05	1.0e+04	2.8e-04
Tc-96m	2.4e+05	6.5e-03	1.1e+06	2.9e-02
Tc-97	6.1e+04	1.7e-03	2.0e+05	5.5e-03
Tc-97m	1.6e+04	4.5e-04	4.2e+04	1.1e-03
Tc-98	1.8e+03	4.9e-05	7.9e+03	2.1e-04
Tc-99	1.4e+04	3.9e-04	3.7e+04	1.0e-03
Tc-99m	1.5e+05	3.9e-03	6.0e+05	1.6e-02
Tc-101	8.4e+04	2.3e-03	3.6e+05	9.7e-03
Tc-104	1.8e+04	4.9e-04	7.9e+04	2.1e-03
Ruthenium				
Ru-94	2.3e+04	6.3e-04	1.0e+05	2.7e-03
Ru-95	3.5e+04	9.6e-04	1.7e+05	4.5e-03
Ru-97	2.1e+04	5.6e-04	9.6e+04	2.6e-03
Ru-103	7.1e+03	1.9e-04	3.2e+04	8.6e-04
Ru-105	1.5e+04	3.9e-04	6.4e+04	1.7e-03
Ru-106	7.0e+02	1.9e-05	2.8e+03	7.7e-05
Rhodium				
Rh-97	3.3e+04	9.0e-04	1.5e+05	4.0e-03
Rh-97m	3.8e+04	1.0e-03	1.8e+05	4.8e-03
Rh-99	6.9e+03	1.9e-04	3.2e+04	8.6e-04
Rh-99m	3.9e+04	1.0e-03	1.8e+05	4.9e-03
Rh-100	3.8e+03	1.0e-04	1.9e+04	5.0e-04
Rh-101	5.0e+03	1.4e-04	2.4e+04	6.4e-04
Rh-101m	1.6e+04	4.3e-04	7.5e+04	2.0e-03
Rh-102	3.4e+03	9.3e-05	1.5e+04	3.9e-04
Rh-102m	8.3e+02	2.2e-05	4.1e+03	1.1e-04
Rh-103m	2.0e+07	5.3e-01	7.9e+07	2.1e+00
Rh-105	3.7e+04	1.0e-03	1.6e+05	4.2e-03
Rh-106m	1.4e+04	3.7e-04	6.4e+04	1.7e-03
Rh-107	6.7e+04	1.8e-03	2.9e+05	7.8e-03
Palladium				
Pd-98	2.4e+04	6.6e-04	1.1e+05	2.9e-03
Pd-99	4.7e+04	1.3e-03	2.1e+05	5.7e-03
Pd-100	3.9e+03	1.1e-04	1.9e+04	5.1e-04
Pd-101	3.3e+04	9.0e-04	1.5e+05	4.1e-03
Pd-103	7.2e+04	1.9e-03	2.7e+05	7.4e-03
Pd-107	1.8e+06	4.8e-02	3.4e+06	9.3e-02
Pd-109	1.8e+04	4.8e-04	7.6e+04	2.0e-03
Pd-111	3.3e+04	8.9e-04	1.4e+05	3.8e-03

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Pd-112	3.3e+03	9.0e-05	1.4e+04	3.9e-04
Silver				
Ag-101	4.7e+04	1.3e-03	2.1e+05	5.6e-03
Ag-102	3.7e+04	9.9e-04	1.6e+05	4.5e-03
Ag-103	5.0e+04	1.4e-03	2.3e+05	6.2e-03
Ag-104	3.1e+04	8.5e-04	1.5e+05	4.1e-03
Ag-104m	2.3e+04	6.3e-04	1.0e+05	2.8e-03
Ag-105	5.4e+03	1.4e-04	2.5e+04	6.6e-04
Ag-106	4.8e+04	1.3e-03	2.1e+05	5.6e-03
Ag-106m	1.7e+03	4.5e-05	8.0e+03	2.2e-04
Ag-108m	1.2e+03	3.1e-05	5.3e+03	1.4e-04
Ag-110m	8.3e+02	2.2e-05	3.8e+03	1.0e-04
Ag-111	8.6e+03	2.3e-04	3.5e+04	9.5e-04
Ag-112	6.4e+03	1.7e-04	2.7e+04	7.4e-04
Ag-113	1.0e+04	2.8e-04	4.4e+04	1.2e-03
Ag-115	2.7e+04	7.2e-04	1.2e+05	3.1e-03
Cadmium				
Cd-104	2.3e+04	6.1e-04	1.0e+05	2.7e-03
Cd-105	4.4e+04	1.2e-03	2.0e+05	5.4e-03
Cd-107	1.9e+05	5.3e-03	7.5e+05	2.0e-02
Cd-109	1.6e+03	4.2e-05	3.9e+03	1.1e-04
Cd-111m	2.5e+05	6.6e-03	1.1e+06	2.9e-02
Cd-113	1.5e+02	4.1e-06	5.9e+02	1.6e-05
Cd-113m	1.6e+02	4.3e-06	5.6e+02	1.5e-05
Cd-115	6.6e+03	1.8e-04	2.5e+04	6.8e-04
Cd-115m	1.6e+03	4.2e-05	3.9e+03	1.1e-04
Cd-117	1.3e+04	3.4e-04	5.5e+04	1.5e-03
Cd-117m	1.1e+04	3.0e-04	5.2e+04	1.4e-03
Cd-118	8.7e+03	2.3e-04	3.7e+04	1.0e-03
Indium				
In-107	4.5e+04	1.2e-03	2.0e+05	5.5e-03
In-108	2.4e+04	6.5e-04	1.1e+05	3.1e-03
In-108m	2.0e+04	5.4e-04	8.9e+04	2.4e-03
In-109	4.3e+04	1.2e-03	2.0e+05	5.5e-03
In-110	9.1e+03	2.5e-04	4.4e+04	1.2e-03
In-110m	1.7e+04	4.7e-04	7.7e+04	2.1e-03
In-111	1.3e+04	3.4e-04	6.0e+04	1.6e-03
In-112	1.6e+05	4.3e-03	6.8e+05	1.8e-02
In-112m	1.4e+05	3.7e-03	5.7e+05	1.5e-02
In-113m	7.8e+04	2.1e-03	3.4e+05	9.3e-03
In-114m	2.7e+03	7.2e-05	9.7e+03	2.6e-04
In-115	2.9e+03	7.9e-05	8.8e+03	2.4e-04
In-115m	4.9e+04	1.3e-03	2.1e+05	5.7e-03
In-116m	3.0e+04	8.1e-04	1.4e+05	3.7e-03
In-117	6.7e+04	1.8e-03	3.0e+05	8.0e-03
In-117m	2.3e+04	6.2e-04	9.9e+04	2.7e-03
In-119m	3.2e+04	8.5e-04	1.4e+05	3.7e-03
Tin				

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Sn-108	7.7e+04	2.1e-03	3.5e+05	9.5e-03
Sn-109	9.7e+04	2.6e-03	4.7e+05	1.3e-02
Sn-110	1.0e+04	2.8e-04	4.7e+04	1.3e-03
Sn-111	8.3e+04	2.2e-03	3.7e+05	9.9e-03
Sn-113	7.0e+03	1.9e-04	2.1e+04	5.6e-04
Sn-113m	5.0e+06	1.3e-01	2.1e+07	5.7e-01
Sn-117m	1.9e+04	5.1e-04	6.8e+04	1.8e-03
Sn-119m	2.7e+04	7.4e-04	6.1e+04	1.6e-03
Sn-121	1.5e+05	4.0e-03	5.2e+05	1.4e-02
Sn-121m	1.1e+04	2.9e-04	2.1e+04	5.7e-04
Sn-123	3.4e+03	9.2e-05	9.1e+03	2.4e-04
Sn-123m	4.5e+04	1.2e-03	1.9e+05	5.2e-03
Sn-125	2.6e+03	7.1e-05	1.1e+04	2.9e-04
Sn-126	6.2e+02	1.7e-05	1.7e+03	4.6e-05
Sn-127	1.3e+04	3.6e-04	6.0e+04	1.6e-03
Sn-128	1.3e+04	3.4e-04	5.6e+04	1.5e-03
Antimony				
Sb-115	6.7e+04	1.8e-03	3.0e+05	8.2e-03
Sb-116	5.0e+04	1.4e-03	2.3e+05	6.1e-03
Sb-116m	3.1e+04	8.4e-04	1.5e+05	4.1e-03
Sb-117	1.7e+05	4.5e-03	7.7e+05	2.1e-02
Sb-118m	1.1e+04	3.0e-04	5.3e+04	1.4e-03
Sb-119	8.0e+04	2.2e-03	3.2e+05	8.8e-03
Sb-120	1.0e+05	2.8e-03	4.6e+05	1.2e-02
Sb-120m	2.2e+03	6.0e-05	1.0e+04	2.8e-04
Sb-122	3.9e+03	1.0e-04	1.6e+04	4.4e-04
Sb-124	1.3e+03	3.6e-05	5.6e+03	1.5e-04
Sb-124n	2.1e+05	5.7e-03	9.5e+05	2.6e-02
Sb-125	3.3e+03	8.9e-05	1.3e+04	3.6e-04
Sb-126	1.3e+03	3.6e-05	5.9e+03	1.6e-04
Sb-126m	4.1e+04	1.1e-03	1.8e+05	4.8e-03
Sb-127	4.0e+03	1.1e-04	1.7e+04	4.5e-04
Sb-128	4.1e+03	1.1e-04	1.9e+04	5.1e-04
Sb-128m	4.4e+04	1.2e-03	2.0e+05	5.3e-03
Sb-129	9.1e+03	2.4e-04	4.0e+04	1.1e-03
Sb-130	1.8e+04	4.8e-04	8.0e+04	2.2e-03
Sb-131	1.7e+04	4.5e-04	7.0e+04	1.9e-03
Tellurium				
Te-114	2.3e+04	6.3e-04	1.0e+05	2.8e-03
Te-116	1.3e+04	3.4e-04	5.6e+04	1.5e-03
Te-117	3.5e+04	9.5e-04	1.6e+05	4.3e-03
Te-118	1.6e+03	4.3e-05	6.4e+03	1.7e-04
Te-119	1.4e+04	3.8e-04	6.6e+04	1.8e-03
Te-119m	3.5e+03	9.6e-05	1.6e+04	4.4e-04
Te-121	5.7e+03	1.6e-04	2.6e+04	6.9e-04
Te-121m	4.1e+03	1.1e-04	1.5e+04	4.0e-04
Te-123	2.9e+05	7.9e-03	7.8e+05	2.1e-02
Te-123m	6.5e+03	1.7e-04	2.1e+04	5.6e-04

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Te-125m	8.5e+03	2.3e-04	2.5e+04	6.8e-04
Te-127	3.8e+04	1.0e-03	1.5e+05	3.9e-03
Te-127m	3.5e+03	9.5e-05	9.8e+03	2.6e-04
Te-129	2.9e+04	8.0e-04	1.3e+05	3.4e-03
Te-129m	1.9e+03	5.1e-05	6.1e+03	1.7e-04
Te-131	2.1e+04	5.7e-04	8.5e+04	2.3e-03
Te-131m	1.7e+03	4.5e-05	6.2e+03	1.7e-04
Te-132	9.1e+02	2.5e-05	3.3e+03	8.9e-05
Te-133	2.8e+04	7.4e-04	1.0e+05	2.8e-03
Te-133m	8.6e+03	2.3e-04	3.2e+04	8.5e-04
Te-134	1.8e+04	5.0e-04	7.6e+04	2.1e-03
Iodine				
I-118	1.8e+04	4.8e-04	7.8e+04	2.1e-03
I-119	4.6e+04	1.2e-03	2.0e+05	5.4e-03
I-120	6.0e+03	1.6e-04	2.5e+04	6.7e-04
I-120m	9.9e+03	2.7e-04	4.2e+04	1.1e-03
I-121	4.0e+04	1.1e-03	1.5e+05	4.1e-03
I-123	9.3e+03	2.5e-04	3.1e+04	8.5e-04
I-124	2.0e+02	5.5e-06	7.6e+02	2.0e-05
I-125	1.5e+02	4.0e-06	7.2e+02	1.9e-05
I-126	8.3e+01	2.2e-06	3.2e+02	8.7e-06
I-128	3.1e+04	8.5e-04	1.3e+05	3.5e-03
I-129	2.1e+01	5.7e-07	1.3e+02	3.4e-06
I-130	1.1e+03	3.1e-05	3.9e+03	1.1e-04
I-131	1.1e+02	2.8e-06	3.8e+02	1.0e-05
I-132	6.2e+03	1.7e-04	2.4e+04	6.4e-04
I-132m	8.9e+03	2.4e-04	3.2e+04	8.6e-04
I-133	5.3e+02	1.4e-05	1.8e+03	4.8e-05
I-134	1.5e+04	4.1e-04	6.3e+04	1.7e-03
I-135	2.2e+03	6.1e-05	7.7e+03	2.1e-04
Cesium				
Cs-125	3.9e+04	1.1e-03	1.7e+05	4.6e-03
Cs-127	5.2e+04	1.4e-03	2.4e+05	6.4e-03
Cs-129	2.5e+04	6.7e-04	1.1e+05	2.9e-03
Cs-130	5.1e+04	1.4e-03	2.2e+05	6.0e-03
Cs-131	3.4e+04	9.3e-04	1.4e+05	3.7e-03
Cs-132	3.7e+03	1.0e-04	1.7e+04	4.6e-04
Cs-134	1.5e+02	3.9e-06	9.4e+02	2.5e-05
Cs-134m	1.2e+05	3.3e-03	4.7e+05	1.3e-02
Cs-135	1.5e+03	4.2e-05	8.1e+03	2.2e-04
Cs-135m	7.1e+04	1.9e-03	3.4e+05	9.3e-03
Cs-136	6.9e+02	1.9e-05	3.2e+03	8.8e-05
Cs-137	1.5e+02	4.1e-06	9.9e+02	2.7e-05
Cs-138	1.4e+04	3.8e-04	6.1e+04	1.7e-03
Barium				
Ba-124	2.1e+04	5.8e-04	9.4e+04	2.5e-03
Ba-126	7.5e+03	2.0e-04	3.3e+04	8.9e-04
Ba-127	6.3e+04	1.7e-03	2.8e+05	7.5e-03

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Ba-128	2.0e+03	5.5e-05	8.4e+03	2.3e-04
Ba-129	5.2e+04	1.4e-03	2.3e+05	6.2e-03
Ba-129m	3.3e+04	8.9e-04	1.6e+05	4.3e-03
Ba-131	8.0e+03	2.2e-04	3.2e+04	8.5e-04
Ba-131m	2.3e+06	6.2e-02	1.0e+07	2.8e-01
Ba-133	1.5e+03	4.1e-05	5.3e+03	1.4e-04
Ba-133m	2.5e+04	6.6e-04	8.7e+04	2.4e-03
Ba-135m	2.9e+04	7.9e-04	1.1e+05	2.9e-03
Ba-139	1.5e+04	4.1e-04	6.5e+04	1.7e-03
Ba-140	2.1e+03	5.7e-05	5.7e+03	1.5e-04
Ba-141	2.6e+04	7.0e-04	1.1e+05	3.0e-03
Ba-142	5.5e+04	1.5e-03	2.4e+05	6.6e-03
Lanthanum				
La-129	6.1e+04	1.6e-03	2.7e+05	7.2e-03
La-131	5.8e+04	1.6e-03	2.6e+05	7.1e-03
La-132	7.3e+03	2.0e-04	3.3e+04	9.0e-04
La-132m	8.0e+04	2.2e-03	3.7e+05	9.9e-03
La-133	1.1e+05	3.0e-03	5.0e+05	1.3e-02
La-135	1.2e+05	3.2e-03	5.3e+05	1.4e-02
La-137	3.6e+04	9.8e-04	1.5e+05	4.0e-03
La-138	1.9e+03	5.1e-05	8.3e+03	2.2e-04
La-140	2.4e+03	6.4e-05	1.1e+04	3.0e-04
La-141	8.9e+03	2.4e-04	3.8e+04	1.0e-03
La-142	1.1e+04	3.0e-04	5.0e+04	1.3e-03
La-143	2.9e+04	7.9e-04	1.3e+05	3.4e-03
Cerium				
Ce-130	2.2e+04	6.0e-04	9.9e+04	2.7e-03
Ce-131	5.9e+04	1.6e-03	2.6e+05	7.1e-03
Ce-132	1.3e+04	3.5e-04	6.0e+04	1.6e-03
Ce-133	2.8e+04	7.4e-04	1.2e+05	3.3e-03
Ce-133m	1.4e+04	3.7e-04	6.5e+04	1.7e-03
Ce-134	2.5e+03	6.8e-05	1.1e+04	3.1e-04
Ce-135	1.1e+04	3.0e-04	5.3e+04	1.4e-03
Ce-137	2.0e+05	5.3e-03	8.9e+05	2.4e-02
Ce-137m	2.6e+04	7.1e-04	1.1e+05	3.1e-03
Ce-139	2.1e+04	5.7e-04	9.5e+04	2.6e-03
Ce-141	2.9e+04	7.9e-04	1.2e+05	3.3e-03
Ce-143	7.6e+03	2.1e-04	3.4e+04	9.2e-04
Ce-144	1.8e+03	5.0e-05	7.2e+03	1.9e-04
Praseodymium				
Pr-134	3.4e+04	9.2e-04	1.5e+05	4.1e-03
Pr-134m	1.9e+04	5.2e-04	8.5e+04	2.3e-03
Pr-135	3.8e+04	1.0e-03	1.7e+05	4.6e-03
Pr-136	4.4e+04	1.2e-03	2.0e+05	5.3e-03
Pr-137	5.5e+04	1.5e-03	2.4e+05	6.6e-03
Pr-138m	1.7e+04	4.6e-04	8.0e+04	2.2e-03
Pr-139	1.0e+05	2.7e-03	4.5e+05	1.2e-02
Pr-142	5.4e+03	1.5e-04	2.3e+04	6.3e-04

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Pr-142m	4.7e+05	1.3e-02	2.0e+06	5.5e-02
Pr-143	1.3e+04	3.5e-04	5.6e+04	1.5e-03
Pr-144	2.8e+04	7.6e-04	1.2e+05	3.3e-03
Pr-145	1.1e+04	3.1e-04	4.9e+04	1.3e-03
Pr-146	1.9e+04	5.1e-04	8.3e+04	2.2e-03
Pr-147	4.7e+04	1.3e-03	2.0e+05	5.5e-03
Neodymium				
Nd-135	2.7e+04	7.4e-04	1.2e+05	3.3e-03
Nd-136	1.9e+04	5.0e-04	8.3e+04	2.3e-03
Nd-137	3.6e+04	9.6e-04	1.6e+05	4.3e-03
Nd-138	5.5e+03	1.5e-04	2.4e+04	6.5e-04
Nd-139	8.5e+04	2.3e-03	3.8e+05	1.0e-02
Nd-139m	1.3e+04	3.5e-04	6.1e+04	1.6e-03
Nd-140	3.4e+03	9.1e-05	1.5e+04	4.1e-04
Nd-141	3.3e+05	8.9e-03	1.5e+06	4.1e-02
Nd-144	7.0e+01	1.9e-06	2.1e+02	5.6e-06
Nd-147	1.3e+04	3.4e-04	5.6e+04	1.5e-03
Nd-149	2.4e+04	6.5e-04	1.0e+05	2.8e-03
Nd-151	6.4e+04	1.7e-03	2.8e+05	7.6e-03
Nd-152	3.1e+04	8.4e-04	1.3e+05	3.6e-03
Promethium				
Pm-141	4.3e+04	1.2e-03	1.9e+05	5.1e-03
Pm-143	1.3e+04	3.5e-04	5.7e+04	1.5e-03
Pm-144	2.8e+03	7.5e-05	1.2e+04	3.3e-04
Pm-145	4.0e+04	1.1e-03	1.6e+05	4.3e-03
Pm-146	4.1e+03	1.1e-04	1.7e+04	4.5e-04
Pm-147	1.6e+05	4.3e-03	3.1e+05	8.3e-03
Pm-148	2.9e+03	7.8e-05	1.3e+04	3.5e-04
Pm-148m	2.3e+03	6.3e-05	1.1e+04	3.0e-04
Pm-149	1.2e+04	3.3e-04	5.2e+04	1.4e-03
Pm-150	9.6e+03	2.6e-04	4.2e+04	1.1e-03
Pm-151	1.1e+04	3.0e-04	5.1e+04	1.4e-03
Samarium				
Sm-140	1.6e+04	4.4e-04	7.1e+04	1.9e-03
Sm-141	3.9e+04	1.0e-03	1.7e+05	4.6e-03
Sm-141m	2.6e+04	7.0e-04	1.1e+05	3.1e-03
Sm-142	9.6e+03	2.6e-04	4.2e+04	1.1e-03
Sm-145	3.0e+04	8.2e-04	1.2e+05	3.4e-03
Sm-146	5.3e+01	1.4e-06	1.6e+02	4.2e-06
Sm-147	5.7e+01	1.6e-06	1.7e+02	4.6e-06
Sm-148	6.7e+01	1.8e-06	2.0e+02	5.3e-06
Sm-151	1.4e+05	3.8e-03	4.2e+05	1.1e-02
Sm-153	2.1e+04	5.7e-04	9.2e+04	2.5e-03
Sm-155	5.3e+04	1.4e-03	2.3e+05	6.2e-03
Sm-156	3.5e+04	9.4e-04	1.5e+05	4.1e-03
Europium				
Eu-145	4.4e+03	1.2e-04	2.2e+04	5.8e-04
Eu-146	2.4e+03	6.4e-05	1.2e+04	3.1e-04

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Eu-147	9.6e+03	2.6e-04	4.6e+04	1.2e-03
Eu-148	2.2e+03	5.9e-05	1.0e+04	2.8e-04
Eu-149	4.3e+04	1.2e-03	1.9e+05	5.2e-03
Eu-150	2.0e+03	5.4e-05	8.5e+03	2.3e-04
Eu-150m	2.1e+04	5.7e-04	9.0e+04	2.4e-03
Eu-152	2.8e+03	7.5e-05	1.1e+04	3.0e-04
Eu-152m	1.0e+04	2.8e-04	4.6e+04	1.2e-03
Eu-152n	7.6e+05	2.1e-02	3.8e+06	1.0e-01
Eu-154	2.5e+03	6.8e-05	9.6e+03	2.6e-04
Eu-154m	1.3e+06	3.5e-02	6.4e+06	1.7e-01
Eu-155	3.9e+04	1.0e-03	1.2e+05	3.3e-03
Eu-156	2.8e+03	7.5e-05	1.3e+04	3.5e-04
Eu-157	1.2e+04	3.1e-04	5.1e+04	1.4e-03
Eu-158	1.8e+04	5.0e-04	8.1e+04	2.2e-03
Eu-159	3.7e+04	9.9e-04	1.6e+05	4.3e-03
Gadolinium				
Gd-145	4.8e+04	1.3e-03	2.2e+05	5.9e-03
Gd-146	6.8e+03	1.8e-04	3.0e+04	8.2e-04
Gd-147	4.9e+03	1.3e-04	2.4e+04	6.4e-04
Gd-148	7.6e+01	2.1e-06	1.7e+02	4.6e-06
Gd-149	8.5e+03	2.3e-04	4.1e+04	1.1e-03
Gd-150	7.9e+01	2.1e-06	1.9e+02	5.1e-06
Gd-151	4.0e+04	1.1e-03	1.7e+05	4.6e-03
Gd-152	1.0e+02	2.7e-06	2.4e+02	6.5e-06
Gd-153	2.6e+04	7.1e-04	1.1e+05	3.0e-03
Gd-159	1.9e+04	5.2e-04	8.3e+04	2.3e-03
Terbium				
Tb-147	1.7e+04	4.7e-04	8.1e+04	2.2e-03
Tb-148	1.4e+04	3.7e-04	6.1e+04	1.7e-03
Tb-149	2.0e+04	5.5e-04	9.5e+04	2.6e-03
Tb-150	1.1e+04	3.1e-04	5.3e+04	1.4e-03
Tb-151	9.7e+03	2.6e-04	4.7e+04	1.3e-03
Tb-152	5.4e+03	1.5e-04	2.5e+04	6.8e-04
Tb-153	1.7e+04	4.5e-04	8.1e+04	2.2e-03
Tb-154	4.7e+03	1.3e-04	2.3e+04	6.1e-04
Tb-155	2.3e+04	6.1e-04	1.1e+05	3.0e-03
Tb-156	2.9e+03	8.0e-05	1.4e+04	3.9e-04
Tb-156m	2.7e+04	7.3e-04	1.3e+05	3.6e-03
Tb-156n	8.4e+04	2.3e-03	4.1e+05	1.1e-02
Tb-157	2.4e+05	6.5e-03	8.1e+05	2.2e-02
Tb-158	3.1e+03	8.3e-05	1.3e+04	3.5e-04
Tb-160	3.8e+03	1.0e-04	1.7e+04	4.7e-04
Tb-161	3.3e+04	9.0e-04	1.4e+05	3.8e-03
Tb-163	8.2e+04	2.2e-03	3.6e+05	9.8e-03
Dysprosium				
Dy-151	1.4e+05	3.9e-03	7.0e+05	1.9e-02
Dy-152	3.6e+04	9.7e-04	1.7e+05	4.6e-03
Dy-153	2.1e+04	5.6e-04	1.0e+05	2.7e-03

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Dy-154	7.3e+01	2.0e-06	1.8e+02	4.8e-06
Dy-155	2.1e+04	5.7e-04	1.0e+05	2.7e-03
Dy-157	4.5e+04	1.2e-03	2.2e+05	5.9e-03
Dy-159	5.3e+04	1.4e-03	2.4e+05	6.4e-03
Dy-165	2.8e+04	7.5e-04	1.2e+05	3.2e-03
Dy-166	1.0e+04	2.8e-04	4.7e+04	1.3e-03
Holmium				
Ho-154	3.6e+04	9.8e-04	1.6e+05	4.3e-03
Ho-155	5.6e+04	1.5e-03	2.5e+05	6.8e-03
Ho-156	1.8e+04	5.0e-04	8.2e+04	2.2e-03
Ho-157	3.2e+05	8.8e-03	1.5e+06	4.1e-02
Ho-159	3.4e+05	9.1e-03	1.6e+06	4.4e-02
Ho-160	1.3e+05	3.4e-03	6.3e+05	1.7e-02
Ho-161	4.5e+05	1.2e-02	2.1e+06	5.6e-02
Ho-162	9.8e+05	2.7e-02	4.6e+06	1.2e-01
Ho-162m	1.3e+05	3.5e-03	6.2e+05	1.7e-02
Ho-163	8.4e+06	2.3e-01	1.9e+07	5.2e-01
Ho-164	2.2e+05	5.9e-03	9.4e+05	2.5e-02
Ho-164m	2.5e+05	6.8e-03	1.1e+06	2.9e-02
Ho-166	6.1e+03	1.6e-04	2.7e+04	7.2e-04
Ho-166m	1.6e+03	4.2e-05	6.6e+03	1.8e-04
Ho-167	4.3e+04	1.2e-03	1.9e+05	5.2e-03
Erbium				
Er-156	6.5e+04	1.8e-03	2.9e+05	7.9e-03
Er-159	9.6e+04	2.6e-03	4.6e+05	1.2e-02
Er-161	3.5e+04	9.4e-04	1.7e+05	4.5e-03
Er-163	1.2e+06	3.4e-02	6.1e+06	1.7e-01
Er-165	2.2e+05	5.9e-03	1.0e+06	2.8e-02
Er-169	2.0e+05	5.5e-03	7.5e+05	2.0e-02
Er-171	1.6e+04	4.3e-04	7.0e+04	1.9e-03
Er-172	7.6e+03	2.0e-04	3.6e+04	9.8e-04
Thulium				
Tm-161	6.1e+04	1.6e-03	2.8e+05	7.6e-03
Tm-162	4.1e+04	1.1e-03	1.8e+05	5.0e-03
Tm-163	4.8e+04	1.3e-03	2.3e+05	6.3e-03
Tm-165	1.2e+04	3.2e-04	5.7e+04	1.5e-03
Tm-166	1.0e+04	2.8e-04	4.9e+04	1.3e-03
Tm-167	2.3e+04	6.2e-04	1.1e+05	2.9e-03
Tm-168	3.7e+03	1.0e-04	1.7e+04	4.7e-04
Tm-170	1.2e+04	3.1e-04	4.4e+04	1.2e-03
Tm-171	5.8e+05	1.6e-02	9.5e+05	2.6e-02
Tm-172	4.8e+03	1.3e-04	2.2e+04	5.9e-04
Tm-173	1.8e+04	4.9e-04	8.0e+04	2.2e-03
Tm-175	6.6e+04	1.8e-03	2.9e+05	7.8e-03
Ytterbium				
Yb-162	5.7e+04	1.6e-03	2.6e+05	7.0e-03
Yb-163	1.2e+05	3.1e-03	5.2e+05	1.4e-02
Yb-164	2.1e+04	5.6e-04	9.1e+04	2.5e-03

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Yb-166	4.2e+03	1.1e-04	2.1e+04	5.6e-04
Yb-167	7.8e+05	2.1e-02	3.8e+06	1.0e-01
Yb-169	1.1e+04	3.0e-04	5.3e+04	1.4e-03
Yb-175	5.5e+04	1.5e-03	2.4e+05	6.4e-03
Yb-177	2.9e+04	7.8e-04	1.2e+05	3.4e-03
Yb-178	2.3e+04	6.3e-04	9.9e+04	2.7e-03
Lutetium				
Lu-165	9.6e+04	2.6e-03	4.3e+05	1.2e-02
Lu-167	5.4e+04	1.5e-03	2.6e+05	7.0e-03
Lu-169	6.0e+03	1.6e-04	2.9e+04	7.9e-04
Lu-170	3.1e+03	8.4e-05	1.5e+04	4.1e-04
Lu-171	7.5e+03	2.0e-04	3.6e+04	9.8e-04
Lu-172	2.8e+03	7.7e-05	1.4e+04	3.7e-04
Lu-173	1.8e+04	4.8e-04	7.1e+04	1.9e-03
Lu-174	2.7e+04	7.4e-04	9.9e+04	2.7e-03
Lu-174m	4.3e+04	1.2e-03	1.5e+05	4.1e-03
Lu-176	3.3e+03	9.1e-05	1.2e+04	3.4e-04
Lu-176m	2.4e+04	6.4e-04	1.0e+05	2.7e-03
Lu-177	5.1e+04	1.4e-03	2.2e+05	5.8e-03
Lu-177m	4.1e+03	1.1e-04	1.8e+04	4.8e-04
Lu-178	3.3e+04	9.0e-04	1.4e+05	3.9e-03
Lu-178m	6.0e+04	1.6e-03	2.7e+05	7.2e-03
Lu-179	1.9e+04	5.1e-04	8.1e+04	2.2e-03
Hafnium				
Hf-170	9.4e+03	2.5e-04	4.6e+04	1.2e-03
Hf-172	1.1e+03	3.0e-05	5.0e+03	1.3e-04
Hf-173	2.0e+04	5.3e-04	9.6e+04	2.6e-03
Hf-174	4.9e+00	1.3e-07	2.6e+01	6.9e-07
Hf-175	9.5e+03	2.6e-04	4.3e+04	1.2e-03
Hf-177m	3.2e+04	8.7e-04	1.5e+05	4.0e-03
Hf-178m	1.4e+02	3.7e-06	8.5e+02	2.3e-05
Hf-179m	4.4e+03	1.2e-04	2.0e+04	5.5e-04
Hf-180m	2.2e+04	5.9e-04	1.0e+05	2.8e-03
Hf-181	6.5e+03	1.7e-04	2.8e+04	7.5e-04
Hf-182	1.4e+02	3.7e-06	8.9e+02	2.4e-05
Hf-182m	6.5e+04	1.7e-03	2.9e+05	8.0e-03
Hf-183	3.0e+04	8.1e-04	1.3e+05	3.6e-03
Hf-184	1.1e+04	3.1e-04	5.1e+04	1.4e-03
Tantalum				
Ta-172	3.1e+04	8.3e-04	1.4e+05	3.7e-03
Ta-173	3.4e+04	9.1e-04	1.6e+05	4.3e-03
Ta-174	2.8e+04	7.6e-04	1.3e+05	3.4e-03
Ta-175	1.4e+04	3.7e-04	6.5e+04	1.8e-03
Ta-176	9.1e+03	2.4e-04	4.4e+04	1.2e-03
Ta-177	6.7e+04	1.8e-03	3.2e+05	8.7e-03
Ta-178m	3.7e+04	9.9e-04	1.7e+05	4.7e-03
Ta-179	1.2e+05	3.1e-03	5.3e+05	1.4e-02
Ta-180	1.5e+05	4.1e-03	6.7e+05	1.8e-02

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Ta-182	3.7e+03	1.0e-04	1.8e+04	4.8e-04
Ta-182m	3.4e+05	9.2e-03	1.4e+06	3.8e-02
Ta-183	1.1e+04	3.0e-04	5.1e+04	1.4e-03
Ta-184	6.8e+03	1.8e-04	3.1e+04	8.4e-04
Ta-185	2.7e+04	7.3e-04	1.2e+05	3.1e-03
Ta-186	4.4e+04	1.2e-03	1.9e+05	5.2e-03
Tungsten				
W-177	5.6e+04	1.5e-03	2.7e+05	7.2e-03
W-178	3.1e+04	8.3e-04	1.3e+05	3.4e-03
W-179	1.8e+06	4.8e-02	8.0e+06	2.2e-01
W-181	5.6e+04	1.5e-03	2.3e+05	6.3e-03
W-185	2.4e+04	6.5e-04	6.0e+04	1.6e-03
W-187	1.3e+04	3.4e-04	5.5e+04	1.5e-03
W-188	2.6e+03	7.1e-05	7.3e+03	2.0e-04
W-190	2.2e+04	6.0e-04	9.5e+04	2.6e-03
Rhenium				
Re-178	6.0e+04	1.6e-03	2.6e+05	7.1e-03
Re-179	1.9e+05	5.1e-03	8.7e+05	2.4e-02
Re-181	8.6e+03	2.3e-04	3.4e+04	9.2e-04
Re-182	2.8e+03	7.6e-05	1.1e+04	3.0e-04
Re-182m	1.0e+04	2.8e-04	4.4e+04	1.2e-03
Re-183	8.7e+03	2.4e-04	2.6e+04	7.1e-04
Re-184	4.1e+03	1.1e-04	1.7e+04	4.6e-04
Re-184m	4.9e+03	1.3e-04	1.6e+04	4.4e-04
Re-186	5.4e+03	1.4e-04	1.7e+04	4.6e-04
Re-186m	5.0e+03	1.3e-04	1.5e+04	4.0e-04
Re-187	2.7e+06	7.2e-02	6.4e+06	1.7e-01
Re-188	4.0e+03	1.1e-04	1.5e+04	4.0e-04
Re-188m	2.2e+05	5.8e-03	7.9e+05	2.1e-02
Re-189	8.3e+03	2.2e-04	2.7e+04	7.4e-04
Re-190m	8.2e+03	2.2e-04	3.3e+04	8.9e-04
Osmium				
Os-180	1.2e+05	3.3e-03	5.6e+05	1.5e-02
Os-181	3.3e+04	8.9e-04	1.5e+05	4.1e-03
Os-182	7.1e+03	1.9e-04	3.4e+04	9.1e-04
Os-183	1.8e+04	5.0e-04	8.8e+04	2.4e-03
Os-183m	1.5e+04	4.0e-04	7.1e+04	1.9e-03
Os-185	6.5e+03	1.8e-04	3.1e+04	8.5e-04
Os-186	1.7e+02	4.5e-06	6.4e+02	1.7e-05
Os-189m	7.4e+06	2.0e-01	2.2e+07	6.0e-01
Os-191	4.3e+04	1.2e-03	1.9e+05	5.2e-03
Os-191m	6.6e+05	1.8e-02	2.7e+06	7.4e-02
Os-193	1.3e+04	3.5e-04	5.7e+04	1.5e-03
Os-194	4.1e+03	1.1e-04	1.8e+04	4.9e-04
Os-196	1.4e+04	3.9e-04	6.1e+04	1.7e-03
Iridium				
Ir-182	3.2e+04	8.7e-04	1.4e+05	3.8e-03
Ir-183	4.8e+04	1.3e-03	2.3e+05	6.1e-03

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Ir-184	1.4e+04	3.9e-04	6.7e+04	1.8e-03
Ir-185	1.4e+04	3.8e-04	6.7e+04	1.8e-03
Ir-186	6.2e+03	1.7e-04	3.0e+04	8.0e-04
Ir-186m	3.5e+04	9.4e-04	1.7e+05	4.5e-03
Ir-187	4.0e+04	1.1e-03	1.9e+05	5.1e-03
Ir-188	3.9e+03	1.1e-04	1.9e+04	5.1e-04
Ir-189	4.5e+04	1.2e-03	2.1e+05	5.6e-03
Ir-190	3.2e+03	8.7e-05	1.6e+04	4.2e-04
Ir-190m	8.4e+05	2.3e-02	4.0e+06	1.1e-01
Ir-190n	2.5e+04	6.8e-04	1.2e+05	3.2e-03
Ir-192	4.2e+03	1.1e-04	1.9e+04	5.2e-04
Ir-192n	3.5e+03	9.6e-05	1.7e+04	4.7e-04
Ir-193m	4.7e+05	1.3e-02	1.4e+06	3.7e-02
Ir-194	5.3e+03	1.4e-04	2.3e+04	6.2e-04
Ir-194m	1.6e+03	4.3e-05	7.6e+03	2.1e-04
Ir-195	3.7e+04	1.0e-03	1.6e+05	4.3e-03
Ir-195m	3.6e+04	9.7e-04	1.6e+05	4.3e-03
Ir-196m	2.1e+04	5.5e-04	9.5e+04	2.6e-03
Platinum				
Pt-184	1.1e+05	3.0e-03	5.1e+05	1.4e-02
Pt-186	2.8e+04	7.6e-04	1.3e+05	3.6e-03
Pt-187	4.3e+04	1.2e-03	2.0e+05	5.4e-03
Pt-188	6.1e+03	1.6e-04	3.0e+04	8.1e-04
Pt-189	2.6e+04	7.0e-04	1.2e+05	3.3e-03
Pt-190	1.5e+02	3.9e-06	5.5e+02	1.5e-05
Pt-191	1.7e+04	4.7e-04	8.3e+04	2.2e-03
Pt-193	4.9e+05	1.3e-02	1.7e+06	4.7e-02
Pt-193m	1.5e+05	4.1e-03	5.7e+05	1.5e-02
Pt-195m	4.6e+04	1.2e-03	2.0e+05	5.4e-03
Pt-197	4.1e+04	1.1e-03	1.7e+05	4.6e-03
Pt-197m	5.6e+04	1.5e-03	2.3e+05	6.3e-03
Pt-199	4.4e+04	1.2e-03	1.9e+05	5.1e-03
Pt-200	7.3e+03	2.0e-04	3.2e+04	8.6e-04
Pt-202	1.9e+03	5.0e-05	8.1e+03	2.2e-04
Gold				
Au-186	4.2e+04	1.1e-03	1.9e+05	5.0e-03
Au-190	4.2e+04	1.1e-03	1.9e+05	5.3e-03
Au-191	5.6e+04	1.5e-03	2.6e+05	7.2e-03
Au-192	1.4e+04	3.9e-04	6.9e+04	1.9e-03
Au-193	4.8e+04	1.3e-03	2.2e+05	6.0e-03
Au-194	7.2e+03	1.9e-04	3.4e+04	9.3e-04
Au-195	1.8e+04	4.9e-04	7.1e+04	1.9e-03
Au-196	9.3e+03	2.5e-04	4.4e+04	1.2e-03
Au-196m	3.5e+04	9.3e-04	1.4e+05	3.9e-03
Au-198	6.8e+03	1.8e-04	3.0e+04	8.1e-04
Au-198m	9.2e+03	2.5e-04	4.1e+04	1.1e-03
Au-199	3.3e+04	9.0e-04	1.4e+05	3.7e-03
Au-200	2.4e+04	6.5e-04	1.0e+05	2.8e-03

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Au-200m	4.6e+03	1.2e-04	2.2e+04	5.8e-04
Au-201	6.8e+04	1.8e-03	2.9e+05	7.8e-03
Mercury				
Hg-190	9.9e+04 ^(a)	2.7e-03	4.6e+05	1.2e-02
	9.8e+04 ^(b)	2.7e-03	4.6e+05	1.2e-02
	9.8e+04 ^(c)	2.7e-03	4.6e+05	1.2e-02
Hg-191m	4.8e+04 ^(a)	1.3e-03	2.2e+05	6.0e-03
	4.8e+04 ^(b)	1.3e-03	2.3e+05	6.1e-03
	4.8e+04 ^(c)	1.3e-03	2.3e+05	6.1e-03
Hg-192	1.7e+04 ^(a)	4.7e-04	8.2e+04	2.2e-03
	1.5e+04 ^(b)	4.2e-04	7.3e+04	2.0e-03
	1.5e+04 ^(c)	4.0e-04	7.1e+04	1.9e-03
Hg-193	3.5e+04 ^(a)	9.6e-04	1.6e+05	4.4e-03
	3.4e+04 ^(b)	9.3e-04	1.6e+05	4.3e-03
	3.4e+04 ^(c)	9.3e-04	1.6e+05	4.4e-03
Hg-193m	9.2e+03 ^(a)	2.5e-04	4.2e+04	1.1e-03
	9.3e+03 ^(b)	2.5e-04	4.3e+04	1.2e-03
	9.4e+03 ^(c)	2.5e-04	4.4e+04	1.2e-03
Hg-194	1.9e+02 ^(a)	5.2e-06	9.6e+02	2.6e-05
	4.6e+02 ^(b)	1.2e-05	2.0e+03	5.5e-05
	1.6e+03 ^(c)	4.3e-05	5.5e+03	1.5e-04
Hg-195	5.1e+04 ^(a)	1.4e-03	2.2e+05	6.0e-03
	5.8e+04 ^(b)	1.6e-03	2.5e+05	6.9e-03
	6.2e+04 ^(c)	1.7e-03	2.8e+05	7.5e-03
Hg-195m	7.1e+03 ^(a)	1.9e-04	3.0e+04	8.1e-04
	1.2e+04 ^(b)	3.1e-04	4.6e+04	1.2e-03
	1.7e+04 ^(c)	4.5e-04	6.7e+04	1.8e-03
Hg-197	1.1e+04 ^(a)	3.0e-04	4.4e+04	1.2e-03
	2.6e+04 ^(b)	7.0e-04	1.0e+05	2.7e-03
	4.4e+04 ^(c)	1.2e-03	1.7e+05	4.5e-03
Hg-197m	7.1e+04 ^(a)	1.9e-03	3.0e+05	8.0e-03
	2.0e+04 ^(b)	5.4e-04	7.3e+04	2.0e-03
	3.2e+04 ^(c)	8.6e-04	1.1e+05	3.1e-03
Hg-199m	6.6e+04 ^(a)	1.8e-03	2.8e+05	7.5e-03
	7.1e+04 ^(b)	1.9e-03	3.0e+05	8.0e-03
	7.2e+04 ^(c)	1.9e-03	3.0e+05	8.2e-03
Hg-203	8.6e+02 ^(a)	2.3e-05	3.8e+03	1.0e-04
	1.9e+03 ^(b)	5.2e-05	7.6e+03	2.0e-04
	5.5e+03 ^(c)	1.5e-04	1.8e+04	4.8e-04
(a) Methyl Mercury (b) Other Organic Mercury (c) Inorganic Mercury				
Thallium				
Tl-194	3.2e+04	8.5e-04	1.4e+05	3.7e-03
Tl-194m	4.3e+04	1.2e-03	2.0e+05	5.3e-03
Tl-195	7.6e+04	2.1e-03	3.5e+05	9.6e-03
Tl-196	3.0e+04	8.2e-04	1.4e+05	3.7e-03
Tl-197	8.5e+04	2.3e-03	3.7e+05	1.0e-02

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Tl-198	2.3e+04	6.1e-04	1.1e+05	2.9e-03
Tl-198m	3.4e+04	9.1e-04	1.5e+05	4.1e-03
Tl-199	7.9e+04	2.1e-03	3.3e+05	9.0e-03
Tl-200	9.1e+03	2.4e-04	4.2e+04	1.1e-03
Tl-201	2.5e+04	6.7e-04	9.8e+04	2.6e-03
Tl-202	4.1e+03	1.1e-04	1.9e+04	5.1e-04
Tl-204	2.1e+03	5.7e-05	7.2e+03	2.0e-04
Lead				
Pb-194	7.8e+04	2.1e-03	3.4e+05	9.3e-03
Pb-195m	8.0e+04	2.2e-03	3.6e+05	9.8e-03
Pb-196	7.1e+04	1.9e-03	3.2e+05	8.5e-03
Pb-197m	4.7e+04	1.3e-03	2.1e+05	5.7e-03
Pb-198	3.1e+04	8.3e-04	1.4e+05	3.9e-03
Pb-199	5.5e+04	1.5e-03	2.5e+05	6.9e-03
Pb-200	1.0e+04	2.7e-04	4.4e+04	1.2e-03
Pb-201	1.8e+04	5.0e-04	8.5e+04	2.3e-03
Pb-202	1.5e+02	4.1e-06	6.6e+02	1.8e-05
Pb-202m	1.7e+04	4.5e-04	7.9e+04	2.1e-03
Pb-203	1.5e+04	4.1e-04	6.4e+04	1.7e-03
Pb-204m	3.8e+04	1.0e-03	1.8e+05	4.9e-03
Pb-205	1.9e+04	5.1e-04	7.1e+04	1.9e-03
Pb-209	7.6e+04	2.0e-03	3.0e+05	8.2e-03
Pb-210	4.1e+00	1.1e-07	1.1e+01	2.9e-07
Pb-211	1.6e+04	4.4e-04	5.0e+04	1.4e-03
Pb-212	2.7e+02	7.3e-06	6.8e+02	1.8e-05
Pb-214	2.2e+04	5.9e-04	7.4e+04	2.0e-03
Bismuth				
Bi-200	3.7e+04	1.0e-03	1.7e+05	4.6e-03
Bi-201	2.1e+04	5.8e-04	1.0e+05	2.7e-03
Bi-202	2.1e+04	5.7e-04	1.0e+05	2.7e-03
Bi-203	5.8e+03	1.6e-04	2.8e+04	7.5e-04
Bi-204	4.7e+03	1.3e-04	2.2e+04	6.1e-04
Bi-205	3.1e+03	8.4e-05	1.5e+04	4.1e-04
Bi-206	1.6e+03	4.4e-05	7.9e+03	2.1e-04
Bi-207	2.3e+03	6.1e-05	1.1e+04	2.9e-04
Bi-208	1.9e+03	5.3e-05	9.6e+03	2.6e-04
Bi-210	6.5e+02	1.8e-05	1.5e+03	4.0e-05
Bi-210m	6.7e+01	1.8e-06	2.3e+02	6.1e-06
Bi-212	1.6e+04	4.3e-04	6.6e+04	1.8e-03
Bi-213	3.2e+04	8.6e-04	1.3e+05	3.4e-03
Bi-214	3.8e+04	1.0e-03	1.6e+05	4.4e-03
Polonium				
Po-203	4.3e+04 ^(a)	1.2e-03	2.0e+05	5.4e-03
	4.3e+04 ^(b)	1.2e-03	2.0e+05	5.4e-03
Po-204	9.8e+03 ^(a)	2.6e-04	4.2e+04	1.1e-03
	1.0e+04 ^(b)	2.8e-04	4.9e+04	1.3e-03
Po-205	3.9e+04 ^(a)	1.1e-03	1.9e+05	5.0e-03
	3.9e+04 ^(b)	1.1e-03	1.9e+05	5.1e-03

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Po-206	1.2e+02 ^(a)	3.2e-06	3.2e+02	8.6e-06
	5.2e+02 ^(b)	1.4e-05	1.5e+03	4.0e-05
Po-207	2.0e+04 ^(a)	5.3e-04	9.3e+04	2.5e-03
	1.8e+04 ^(b)	4.9e-04	8.7e+04	2.3e-03
Po-208	7.6e-01 ^(a)	2.1e-08	1.5e+00	4.2e-08
	3.8e+00 ^(b)	1.0e-07	7.7e+00	2.1e-07
Po-209	7.4e-01 ^(a)	2.0e-08	1.5e+00	4.1e-08
	3.7e+00 ^(b)	1.0e-07	7.5e+00	2.0e-07
Po-210	1.1e+00 ^(a)	2.9e-08	2.3e+00	6.2e-08
	5.4e+00 ^(b)	1.5e-07	1.1e+01	3.1e-07
(a) Organic Polonium				
(b) Inorganic Polonium				
Astatine				
At-205	2.5e+04	6.9e-04	8.5e+04	2.3e-03
At-206	1.9e+04	5.0e-04	6.4e+04	1.7e-03
At-207	2.5e+03	6.7e-05	7.6e+03	2.1e-04
At-208	5.6e+03	1.5e-04	1.5e+04	4.1e-04
At-209	8.0e+02	2.2e-05	2.4e+03	6.5e-05
At-210	2.2e+02	6.0e-06	5.9e+02	1.6e-05
At-211	1.9e+01	5.2e-07	5.6e+01	1.5e-06
Francium				
Fr-212	1.3e+04	3.4e-04	4.2e+04	1.1e-03
Fr-222	5.2e+03	1.4e-04	1.9e+04	5.1e-04
Fr-223	8.2e+03	2.2e-04	1.6e+04	4.4e-04
Radium				
Ra-223	2.3e+01	6.2e-07	3.5e+01	9.4e-07
Ra-224	3.7e+01	1.0e-06	6.2e+01	1.7e-06
Ra-225	1.8e+01	4.9e-07	2.4e+01	6.6e-07
Ra-226	1.0e+01	2.8e-07	2.5e+01	6.8e-07
Ra-227	2.9e+04	7.8e-04	1.0e+05	2.7e-03
Ra-228	2.7e+00	7.3e-08	4.5e+00	1.2e-07
Ra-230	1.2e+04	3.3e-04	5.2e+04	1.4e-03
Actinium				
Ac-224	1.6e+03	4.3e-05	3.0e+03	8.0e-05
Ac-225	7.7e+01	2.1e-06	2.4e+02	6.5e-06
Ac-226	5.4e+03	1.5e-04	1.0e+04	2.7e-04
Ac-227	9.0e+00	2.4e-07	2.2e+01	6.0e-07
Ac-228	1.1e+04	2.9e-04	3.8e+04	1.0e-03
Thorium				
Th-226	5.3e+05	1.4e-02	1.1e+06	2.9e-02
Th-227	5.8e+02	1.6e-05	7.2e+02	2.0e-05
Th-228	3.1e+01	8.3e-07	4.2e+01	1.1e-06
Th-229	7.3e+00	2.0e-07	1.8e+01	4.7e-07
Th-230	2.7e+01	7.2e-07	7.0e+01	1.9e-06
Th-231	1.0e+05	2.8e-03	4.0e+05	1.1e-02
Th-232	2.3e+01	6.2e-07	6.4e+01	1.7e-06
Th-233	8.0e+04	2.2e-03	3.4e+05	9.2e-03
Th-234	3.1e+03	8.4e-05	1.3e+04	3.6e-04

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Th-236	2.0e+04	5.4e-04	8.6e+04	2.3e-03
Protactinium				
Pa-227	5.3e+04	1.4e-03	2.1e+05	5.6e-03
Pa-228	4.8e+03	1.3e-04	1.4e+04	3.9e-04
Pa-229	7.2e+04	2.0e-03	2.7e+05	7.4e-03
Pa-230	4.7e+03	1.3e-04	1.1e+04	2.9e-04
Pa-231	9.5e+00	2.6e-07	3.1e+01	8.4e-07
Pa-232	7.9e+03	2.1e-04	3.7e+04	1.0e-03
Pa-233	1.5e+04	4.1e-04	6.7e+04	1.8e-03
Pa-234	1.1e+04	3.0e-04	5.1e+04	1.4e-03
Pa-235	6.1e+04	1.7e-03	2.6e+05	7.1e-03
Uranium				
U-230	7.8e+01	2.1e-06	1.2e+02	3.3e-06
U-231	3.6e+04	9.9e-04	1.5e+05	4.0e-03
U-232	7.9e+00	2.1e-07	1.9e+01	5.1e-07
U-233	4.5e+01	1.2e-06	1.3e+02	3.5e-06
U-234	4.5e+01	1.2e-06	1.3e+02	3.6e-06
U-235	5.0e+01	1.3e-06	1.5e+02	3.9e-06
U-235m	2.1e+12	5.7e+04	4.0e+12	1.1e+05
U-236	4.9e+01	1.3e-06	1.4e+02	3.9e-06
U-237	2.4e+04	6.5e-04	1.0e+05	2.8e-03
U-238	5.2e+01	1.4e-06	1.5e+02	4.1e-06
U-239	7.5e+04	2.0e-03	3.2e+05	8.7e-03
U-240	6.9e+03	1.9e-04	3.0e+04	8.1e-04
U-242	2.9e+04	7.9e-04	1.3e+05	3.4e-03
Neptunium				
Np-232	2.3e+05	6.2e-03	1.1e+06	2.9e-02
Np-233	1.3e+06	3.5e-02	6.2e+06	1.7e-01
Np-234	5.3e+03	1.4e-04	2.6e+04	7.0e-04
Np-235	1.9e+05	5.2e-03	5.9e+05	1.6e-02
Np-236	3.1e+02	8.4e-06	1.0e+03	2.7e-05
Np-236m	5.0e+04	1.4e-03	1.6e+05	4.2e-03
Np-237	5.1e+01	1.4e-06	1.2e+02	3.3e-06
Np-238	7.6e+03	2.1e-04	3.5e+04	9.3e-04
Np-239	2.2e+04	5.8e-04	9.6e+04	2.6e-03
Np-240	3.5e+04	9.4e-04	1.5e+05	4.1e-03
Np-241	1.1e+05	2.9e-03	4.6e+05	1.2e-02
Plutonium				
Pu-232	1.4e+05	3.7e-03	5.4e+05	1.5e-02
Pu-234	5.8e+04	1.6e-03	2.4e+05	6.5e-03
Pu-235	1.8e+06	4.8e-02	8.4e+06	2.3e-01
Pu-236	6.5e+01	1.8e-06	1.4e+02	3.8e-06
Pu-237	6.0e+04	1.6e-03	2.6e+05	7.0e-03
Pu-238	1.6e+01	4.3e-07	5.4e+01	1.5e-06
Pu-239	1.5e+01	4.0e-07	5.1e+01	1.4e-06
Pu-240	1.5e+01	4.0e-07	5.1e+01	1.4e-06
Pu-241	1.6e+03	4.4e-05	6.6e+03	1.8e-04
Pu-242	1.5e+01	4.2e-07	5.3e+01	1.4e-06

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Pu-243	9.0e+04	2.4e-03	3.7e+05	1.0e-02
Pu-244	1.6e+01	4.2e-07	5.4e+01	1.5e-06
Pu-245	1.3e+04	3.5e-04	5.6e+04	1.5e-03
Pu-246	2.9e+03	7.8e-05	1.3e+04	3.6e-04
Americium				
Am-237	1.8e+05	5.0e-03	8.5e+05	2.3e-02
Am-238	7.4e+04	2.0e-03	3.6e+05	9.6e-03
Am-239	3.7e+04	1.0e-03	1.7e+05	4.5e-03
Am-240	6.3e+03	1.7e-04	3.0e+04	8.2e-04
Am-241	2.7e+01	7.4e-07	7.3e+01	2.0e-06
Am-242	3.3e+04	8.9e-04	7.9e+04	2.1e-03
Am-242m	2.8e+01	7.5e-07	8.3e+01	2.2e-06
Am-243	2.8e+01	7.5e-07	7.5e+01	2.0e-06
Am-244	1.4e+04	3.9e-04	6.4e+04	1.7e-03
Am-244m	5.4e+04	1.5e-03	2.3e+05	6.2e-03
Am-245	5.6e+04	1.5e-03	2.3e+05	6.3e-03
Am-246	3.9e+04	1.1e-03	1.7e+05	4.6e-03
Am-246m	4.9e+04	1.3e-03	2.1e+05	5.8e-03
Am-247	5.9e+04	1.6e-03	2.5e+05	6.8e-03
Curium				
Cm-238	5.8e+04	1.6e-03	2.7e+05	7.3e-03
Cm-239	8.2e+04	2.2e-03	3.8e+05	1.0e-02
Cm-240	9.8e+02	2.6e-05	1.4e+03	3.9e-05
Cm-241	6.9e+03	1.9e-04	2.7e+04	7.3e-04
Cm-242	2.9e+02	7.9e-06	4.2e+02	1.1e-05
Cm-243	3.4e+01	9.1e-07	8.2e+01	2.2e-06
Cm-244	3.9e+01	1.0e-06	9.0e+01	2.4e-06
Cm-245	2.7e+01	7.3e-07	7.3e+01	2.0e-06
Cm-246	2.7e+01	7.3e-07	7.3e+01	2.0e-06
Cm-247	2.9e+01	8.0e-07	7.9e+01	2.1e-06
Cm-248	7.5e+00	2.0e-07	2.0e+01	5.5e-07
Cm-249	7.1e+04	1.9e-03	3.0e+05	8.1e-03
Cm-250	1.1e+00	3.0e-08	3.0e+00	8.1e-08
Cm-251	6.5e+04	1.7e-03	2.8e+05	7.5e-03
Berkelium				
Bk-245	1.8e+04	4.7e-04	8.0e+04	2.2e-03
Bk-246	7.9e+03	2.1e-04	3.8e+04	1.0e-03
Bk-247	3.0e+01	8.2e-07	8.6e+01	2.3e-06
Bk-248m	2.2e+04	5.9e-04	6.5e+04	1.8e-03
Bk-249	1.4e+04	3.9e-04	4.6e+04	1.2e-03
Bk-250	2.4e+04	6.4e-04	1.0e+05	2.8e-03
Bk-251	6.5e+04	1.7e-03	2.7e+05	7.4e-03
Californium				
Cf-244	1.8e+06	4.9e-02	2.8e+06	7.5e-02
Cf-246	1.7e+04	4.5e-04	2.2e+04	6.0e-04
Cf-247	2.6e+05	7.0e-03	1.1e+06	3.1e-02
Cf-248	1.8e+02	4.8e-06	2.8e+02	7.5e-06
Cf-249	3.2e+01	8.6e-07	8.9e+01	2.4e-06

Table 6. Derived concentration standards for members of the public for ingested water and milk (cont'd)

Nuclide	Ingested water, DCS		Ingested milk, DCS	
	(Bq/L)	(μ Ci/mL)	(Bq/L)	(μ Ci/mL)
Cf-250	5.1e+01	1.4e-06	1.2e+02	3.1e-06
Cf-251	3.1e+01	8.5e-07	8.9e+01	2.4e-06
Cf-252	5.9e+01	1.6e-06	1.0e+02	2.7e-06
Cf-253	2.5e+03	6.7e-05	3.0e+03	8.2e-05
Cf-254	2.4e+01	6.4e-07	3.3e+01	9.0e-07
Cf-255	8.1e+04	2.2e-03	2.7e+05	7.2e-03
Einsteinium				
Es-249	1.4e+05	3.8e-03	6.7e+05	1.8e-02
Es-250	1.2e+04	3.2e-04	5.3e+04	1.4e-03
Es-250m	9.1e+04	2.5e-03	4.2e+05	1.1e-02
Es-251	5.1e+04	1.4e-03	2.2e+05	6.0e-03
Es-253	2.3e+03	6.1e-05	2.7e+03	7.4e-05
Es-254	1.9e+02	5.2e-06	3.0e+02	8.1e-06
Es-254m	6.8e+03	1.8e-04	1.8e+04	4.8e-04
Es-255	1.1e+03	3.0e-05	1.4e+03	3.7e-05
Es-256	7.7e+03	2.1e-04	3.1e+04	8.4e-04
Fermium				
Fm-251	9.4e+04	2.6e-03	4.2e+05	1.1e-02
Fm-252	2.5e+04	6.8e-04	3.5e+04	9.5e-04
Fm-253	1.2e+04	3.1e-04	1.7e+04	4.5e-04
Fm-254	3.7e+05	1.0e-02	6.7e+05	1.8e-02
Fm-255	4.6e+04	1.2e-03	7.0e+04	1.9e-03
Fm-256	1.2e+03	3.1e-05	4.8e+03	1.3e-04
Fm-257	2.6e+02	6.9e-06	3.3e+02	8.9e-06

Table 7. Derived concentration standards for members of the public for inhalation of particles

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Hydrogen						
H-3	1.6e+04	4.4e-07	2.9e+03	7.7e-08	2.6e+02	6.9e-09
Beryllium						
Be-7	4.2e+03	1.1e-07	2.2e+03	5.9e-08	1.6e+03	4.2e-08
Be-10	9.5e+00	2.6e-10	1.2e+01	3.4e-10	1.5e+00	4.1e-11
Carbon						
C-11	2.0e+04	5.3e-07	1.1e+04	3.1e-07	1.1e+04	3.1e-07
C-14	2.0e+03	5.4e-08	1.4e+02	3.8e-09	1.1e+01	3.0e-10
Fluorine						
F-18	6.6e+03	1.8e-07	3.7e+03	9.9e-08	3.6e+03	9.7e-08
Sodium						
Na-22	9.9e+01	2.7e-09	1.5e+01	4.1e-10	3.3e+00	8.8e-11
Na-24	7.1e+02	1.9e-08	3.6e+02	9.8e-09	3.3e+02	9.0e-09
Magnesium						
Mg-28	3.4e+02	9.3e-09	1.7e+02	4.6e-09	1.6e+02	4.3e-09
Aluminum						
Al-26	1.4e+01	3.7e-10	6.9e+00	1.9e-10	3.5e-01	9.6e-12
Silicon						
Si-31	4.4e+03	1.2e-07	2.4e+03	6.5e-08	2.3e+03	6.3e-08
Si-32	2.4e+02	6.4e-09	1.0e+01	2.8e-10	4.2e-01	1.1e-11
Phosphorus						
P-32	1.3e+02	3.5e-09	6.4e+01	1.7e-09	5.4e+01	1.4e-09
P-33	6.7e+02	1.8e-08	2.8e+02	7.6e-09	2.3e+02	6.2e-09
Sulfur						
S-35	8.2e+03	2.2e-07	2.6e+02	7.1e-09	1.6e+02	4.3e-09
S-38	1.1e+03	2.9e-08	6.8e+02	1.8e-08	6.6e+02	1.8e-08
Chlorine						
Cl-34m	5.0e+03	1.3e-07	3.7e+03	1.0e-07	3.7e+03	9.9e-08
Cl-36	2.8e+02	7.6e-09	2.8e+01	7.5e-10	1.4e+00	3.7e-11
Cl-38	4.5e+03	1.2e-07	3.2e+03	8.8e-08	3.2e+03	8.7e-08
Cl-39	5.1e+03	1.4e-07	3.5e+03	9.4e-08	3.4e+03	9.2e-08
Potassium						
K-40	9.7e+01	2.6e-09	1.3e+01	3.4e-10	5.3e-01	1.4e-11
K-42	9.0e+02	2.4e-08	3.7e+02	1.0e-08	3.4e+02	9.2e-09
K-43	1.4e+03	3.8e-08	5.8e+02	1.6e-08	5.2e+02	1.4e-08
K-44	6.6e+03	1.8e-07	5.2e+03	1.4e-07	5.1e+03	1.4e-07
K-45	1.0e+04	2.8e-07	8.4e+03	2.3e-07	8.3e+03	2.2e-07
Calcium						
Ca-41	2.6e+04	6.9e-07	5.0e+03	1.3e-07	2.3e+02	6.1e-09
Ca-45	4.8e+02	1.3e-08	1.3e+02	3.5e-09	7.0e+01	1.9e-09
Ca-47	3.3e+02	9.0e-09	1.5e+02	4.0e-09	1.3e+02	3.5e-09
Scandium						
Sc-43	2.9e+03	7.9e-08	1.8e+03	4.8e-08	1.7e+03	4.7e-08
Sc-44	1.8e+03	4.9e-08	1.2e+03	3.2e-08	1.2e+03	3.2e-08
Sc-44m	2.6e+02	7.0e-09	1.6e+02	4.3e-09	1.5e+02	3.9e-09
Sc-46	2.8e+01	7.5e-10	2.8e+01	7.5e-10	2.1e+01	5.8e-10

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μCi/mL)	(Bq/m ³)	(μCi/mL)	(Bq/m ³)	(μCi/mL)
Sc-47	1.5e+03	4.1e-08	5.2e+02	1.4e-08	4.5e+02	1.2e-08
Sc-48	3.1e+02	8.4e-09	2.2e+02	5.8e-09	2.0e+02	5.4e-09
Sc-49	5.8e+03	1.6e-07	4.0e+03	1.1e-07	3.9e+03	1.1e-07
Titanium						
Ti-44	3.3e-01	8.8e-12	6.4e-01	1.7e-11	3.2e-01	8.6e-12
Ti-45	3.8e+03	1.0e-07	2.3e+03	6.3e-08	2.3e+03	6.1e-08
Vanadium						
V-47	7.5e+03	2.0e-07	5.7e+03	1.5e-07	5.6e+03	1.5e-07
V-48	1.7e+02	4.5e-09	7.1e+01	1.9e-09	5.8e+01	1.6e-09
V-49	2.0e+04	5.5e-07	4.7e+03	1.3e-07	1.7e+03	4.6e-08
V-50	1.4e+02	3.9e-09	3.2e+01	8.6e-10	1.4e+00	3.7e-11
Chromium						
Cr-48	1.9e+03	5.2e-08	9.6e+02	2.6e-08	8.1e+02	2.2e-08
Cr-49	7.2e+03	1.9e-07	5.2e+03	1.4e-07	5.2e+03	1.4e-07
Cr-51	6.9e+03	1.9e-07	3.8e+03	1.0e-07	3.0e+03	8.1e-08
Manganese						
Mn-51	5.4e+03	1.5e-07	3.9e+03	1.0e-07	3.8e+03	1.0e-07
Mn-52	1.5e+02	4.1e-09	1.3e+02	3.5e-09	1.2e+02	3.2e-09
Mn-52m	7.7e+03	2.1e-07	6.2e+03	1.7e-07	6.1e+03	1.7e-07
Mn-53	9.4e+03	2.5e-07	2.8e+03	7.5e-08	1.3e+02	3.6e-09
Mn-54	1.5e+02	3.9e-09	6.3e+01	1.7e-09	2.6e+01	7.0e-10
Mn-56	2.4e+03	6.4e-08	1.5e+03	4.1e-08	1.5e+03	4.0e-08
Iron						
Fe-52	5.8e+02	1.6e-08	3.6e+02	9.8e-09	3.5e+02	9.5e-09
Fe-55	1.6e+02	4.2e-09	4.2e+02	1.1e-08	5.5e+02	1.5e-08
Fe-59	3.3e+01	8.9e-10	5.3e+01	1.4e-09	4.9e+01	1.3e-09
Fe-60	1.9e+00	5.1e-11	4.9e+00	1.3e-10	7.4e-01	2.0e-11
Cobalt						
Co-55	5.4e+02	1.5e-08	4.5e+02	1.2e-08	4.3e+02	1.2e-08
Co-56	7.3e+01	2.0e-09	2.4e+01	6.5e-10	1.6e+01	4.2e-10
Co-57	7.6e+02	2.0e-08	2.5e+02	6.8e-09	1.1e+02	3.0e-09
Co-58	2.5e+02	6.8e-09	8.4e+01	2.3e-09	5.5e+01	1.5e-09
Co-58m	3.7e+04	9.9e-07	1.4e+04	3.8e-07	9.5e+03	2.6e-07
Co-60	2.7e+01	7.2e-10	1.3e+01	3.4e-10	2.3e+00	6.3e-11
Co-60m	1.3e+05	3.4e-06	1.2e+05	3.3e-06	1.0e+05	2.8e-06
Co-61	3.7e+03	1.0e-07	3.6e+03	9.7e-08	3.6e+03	9.6e-08
Co-62m	9.3e+03	2.5e-07	9.2e+03	2.5e-07	9.2e+03	2.5e-07
Nickel						
Ni-56	4.8e+02	1.3e-08	1.6e+02	4.3e-09	1.1e+02	3.1e-09
Ni-57	6.7e+02	1.8e-08	4.3e+02	1.2e-08	3.9e+02	1.1e-08
Ni-59	3.8e+03	1.0e-07	1.6e+03	4.4e-08	9.1e+01	2.5e-09
Ni-63	1.4e+03	3.7e-08	4.9e+02	1.3e-08	4.3e+01	1.2e-09
Ni-65	2.4e+03	6.5e-08	2.1e+03	5.8e-08	2.1e+03	5.7e-08
Ni-66	3.6e+02	9.8e-09	1.5e+02	4.0e-09	1.3e+02	3.4e-09
Copper						
Cu-60	7.0e+03	1.9e-07	5.7e+03	1.6e-07	5.7e+03	1.5e-07
Cu-61	4.2e+03	1.1e-07	2.7e+03	7.3e-08	2.6e+03	7.1e-08

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Cu-64	4.5e+03	1.2e-07	2.2e+03	6.0e-08	2.1e+03	5.7e-08
Cu-67	1.4e+03	3.9e-08	5.6e+02	1.5e-08	5.0e+02	1.4e-08
Zinc						
Zn-62	6.9e+02	1.9e-08	4.2e+02	1.1e-08	4.0e+02	1.1e-08
Zn-63	6.2e+03	1.7e-07	4.6e+03	1.2e-07	4.5e+03	1.2e-07
Zn-65	5.0e+01	1.4e-09	6.5e+01	1.8e-09	4.4e+01	1.2e-09
Zn-69	1.1e+04	2.9e-07	6.8e+03	1.8e-07	6.7e+03	1.8e-07
Zn-69m	2.0e+03	5.3e-08	1.0e+03	2.7e-08	9.3e+02	2.5e-08
Zn-71m	2.2e+03	5.9e-08	1.4e+03	3.7e-08	1.3e+03	3.6e-08
Zn-72	2.5e+02	6.8e-09	1.8e+02	4.8e-09	1.6e+02	4.4e-09
Gallium						
Ga-65	1.3e+04	3.5e-07	1.1e+04	2.9e-07	1.1e+04	2.9e-07
Ga-66	7.5e+02	2.0e-08	4.8e+02	1.3e-08	4.6e+02	1.2e-08
Ga-67	3.4e+03	9.1e-08	1.2e+03	3.1e-08	1.0e+03	2.7e-08
Ga-68	4.9e+03	1.3e-07	3.4e+03	9.2e-08	3.4e+03	9.1e-08
Ga-70	1.3e+04	3.6e-07	1.0e+04	2.8e-07	1.0e+04	2.8e-07
Ga-72	7.0e+02	1.9e-08	4.4e+02	1.2e-08	4.2e+02	1.1e-08
Ga-73	2.9e+03	7.8e-08	1.5e+03	3.9e-08	1.4e+03	3.8e-08
Germanium						
Ge-66	3.2e+03	8.5e-08	1.7e+03	4.6e-08	1.6e+03	4.4e-08
Ge-67	8.9e+03	2.4e-07	7.1e+03	1.9e-07	7.0e+03	1.9e-07
Ge-68	3.6e+02	9.7e-09	1.1e+01	2.9e-10	4.0e+00	1.1e-10
Ge-69	1.8e+03	5.0e-08	7.3e+02	2.0e-08	6.5e+02	1.8e-08
Ge-71	6.1e+04	1.6e-06	1.1e+04	3.0e-07	8.7e+03	2.4e-07
Ge-75	7.6e+03	2.1e-07	4.5e+03	1.2e-07	4.4e+03	1.2e-07
Ge-77	1.2e+03	3.3e-08	5.2e+02	1.4e-08	4.8e+02	1.3e-08
Ge-78	3.1e+03	8.3e-08	1.7e+03	4.5e-08	1.6e+03	4.4e-08
Arsenic						
As-69	1.0e+04	2.7e-07	8.2e+03	2.2e-07	8.1e+03	2.2e-07
As-70	3.7e+03	9.9e-08	2.8e+03	7.5e-08	2.7e+03	7.4e-08
As-71	1.4e+03	3.9e-08	6.1e+02	1.7e-08	5.4e+02	1.5e-08
As-72	4.8e+02	1.3e-08	2.2e+02	5.9e-09	2.0e+02	5.4e-09
As-73	2.2e+03	5.8e-08	2.2e+02	5.8e-09	1.4e+02	3.7e-09
As-74	3.9e+02	1.0e-08	1.0e+02	2.8e-09	8.0e+01	2.2e-09
As-76	6.3e+02	1.7e-08	2.7e+02	7.3e-09	2.4e+02	6.6e-09
As-77	2.3e+03	6.1e-08	7.5e+02	2.0e-08	6.7e+02	1.8e-08
As-78	2.7e+03	7.2e-08	1.8e+03	4.9e-08	1.8e+03	4.9e-08
Selenium						
Se-70	4.3e+03	1.2e-07	3.0e+03	8.1e-08	3.0e+03	8.0e-08
Se-72	6.5e+01	1.8e-09	5.0e+01	1.4e-09	4.6e+01	1.2e-09
Se-73	1.9e+03	5.1e-08	1.1e+03	3.1e-08	1.1e+03	2.9e-08
Se-73m	1.6e+04	4.2e-07	1.0e+04	2.7e-07	9.7e+03	2.6e-07
Se-75	1.1e+02	2.9e-09	1.1e+02	3.1e-09	8.3e+01	2.3e-09
Se-79	1.1e+02	3.1e-09	9.2e+01	2.5e-09	1.0e+01	2.8e-10
Se-81	1.5e+04	4.1e-07	1.2e+04	3.3e-07	1.2e+04	3.3e-07
Se-81m	6.2e+03	1.7e-07	3.6e+03	9.7e-08	3.5e+03	9.6e-08
Se-83	9.1e+03	2.5e-07	6.5e+03	1.8e-07	6.4e+03	1.7e-07

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Bromine						
Br-74	6.3e+03	1.7e-07	4.9e+03	1.3e-07	4.9e+03	1.3e-07
Br-74m	3.7e+03	1.0e-07	2.6e+03	7.1e-08	2.6e+03	7.0e-08
Br-75	5.0e+03	1.3e-07	3.1e+03	8.4e-08	3.0e+03	8.1e-08
Br-76	7.7e+02	2.1e-08	3.7e+02	1.0e-08	3.4e+02	9.3e-09
Br-77	3.6e+03	9.8e-08	2.2e+03	5.8e-08	2.0e+03	5.3e-08
Br-80	1.5e+04	4.0e-07	1.2e+04	3.2e-07	1.2e+04	3.1e-07
Br-80m	3.0e+03	8.1e-08	1.4e+03	3.7e-08	1.3e+03	3.5e-08
Br-82	6.2e+02	1.7e-08	3.1e+02	8.4e-09	2.8e+02	7.7e-09
Br-83	6.9e+03	1.9e-07	3.6e+03	9.7e-08	3.5e+03	9.4e-08
Br-84	5.8e+03	1.6e-07	4.3e+03	1.2e-07	4.3e+03	1.1e-07
Rubidium						
Rb-78	7.9e+03	2.1e-07	6.4e+03	1.7e-07	6.4e+03	1.7e-07
Rb-79	8.9e+03	2.4e-07	6.8e+03	1.8e-07	6.7e+03	1.8e-07
Rb-81	5.9e+03	1.6e-07	2.8e+03	7.7e-08	2.7e+03	7.3e-08
Rb-81m	2.4e+04	6.6e-07	1.3e+04	3.4e-07	1.2e+04	3.3e-07
Rb-82m	2.5e+03	6.8e-08	1.3e+03	3.6e-08	1.3e+03	3.4e-08
Rb-83	2.0e+02	5.4e-09	1.4e+02	3.7e-09	9.5e+01	2.6e-09
Rb-84	1.3e+02	3.6e-09	7.7e+01	2.1e-09	6.2e+01	1.7e-09
Rb-84m	3.8e+04	1.0e-06	2.8e+04	7.6e-07	2.7e+04	7.2e-07
Rb-86	1.6e+02	4.5e-09	5.5e+01	1.5e-09	4.3e+01	1.2e-09
Rb-87	3.4e+02	9.1e-09	6.1e+01	1.6e-09	4.0e+00	1.1e-10
Rb-88	6.8e+03	1.8e-07	5.4e+03	1.5e-07	5.4e+03	1.5e-07
Rb-89	1.1e+04	3.0e-07	8.9e+03	2.4e-07	8.7e+03	2.3e-07
Strontium						
Sr-80	1.6e+03	4.4e-08	1.1e+03	2.8e-08	1.0e+03	2.8e-08
Sr-81	7.8e+03	2.1e-07	5.8e+03	1.6e-07	5.7e+03	1.5e-07
Sr-82	7.0e+01	1.9e-09	1.9e+01	5.1e-10	1.4e+01	3.8e-10
Sr-83	1.4e+03	3.7e-08	6.9e+02	1.9e-08	6.1e+02	1.7e-08
Sr-85	4.2e+02	1.1e-08	1.7e+02	4.7e-09	1.2e+02	3.2e-09
Sr-85m	8.4e+04	2.3e-06	5.6e+04	1.5e-06	5.1e+04	1.4e-06
Sr-87m	1.8e+04	4.8e-07	1.1e+04	2.9e-07	1.0e+04	2.8e-07
Sr-89	1.4e+02	3.7e-09	3.3e+01	9.0e-10	2.2e+01	6.0e-10
Sr-90	4.5e+00	1.2e-10	4.1e+00	1.1e-10	3.6e-01	9.6e-12
Sr-91	1.2e+03	3.1e-08	5.9e+02	1.6e-08	5.3e+02	1.4e-08
Sr-92	2.0e+03	5.5e-08	1.0e+03	2.8e-08	9.9e+02	2.7e-08
Yttrium						
Y-84m	3.0e+03	8.2e-08	3.0e+03	8.1e-08	3.0e+03	8.1e-08
Y-85	2.2e+03	6.0e-08	2.1e+03	5.7e-08	2.1e+03	5.6e-08
Y-85m	1.4e+03	3.7e-08	1.3e+03	3.4e-08	1.2e+03	3.3e-08
Y-86	5.4e+02	1.5e-08	4.8e+02	1.3e-08	4.7e+02	1.3e-08
Y-86m	8.9e+03	2.4e-07	8.0e+03	2.2e-07	7.8e+03	2.1e-07
Y-87	8.7e+02	2.3e-08	5.8e+02	1.6e-08	5.3e+02	1.4e-08
Y-87m	2.3e+03	6.3e-08	1.7e+03	4.7e-08	1.6e+03	4.4e-08
Y-88	3.9e+01	1.0e-09	2.7e+01	7.2e-10	2.0e+01	5.3e-10
Y-90	3.1e+02	8.3e-09	1.7e+02	4.6e-09	1.5e+02	4.1e-09
Y-90m	4.0e+03	1.1e-07	2.5e+03	6.9e-08	2.3e+03	6.3e-08

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Y-91	8.9e+01	2.4e-09	2.8e+01	7.6e-10	1.9e+01	5.2e-10
Y-91m	3.2e+04	8.7e-07	2.2e+04	5.9e-07	1.8e+04	4.8e-07
Y-92	9.8e+02	2.6e-08	9.2e+02	2.5e-08	9.1e+02	2.5e-08
Y-93	5.9e+02	1.6e-08	5.1e+02	1.4e-08	4.9e+02	1.3e-08
Y-94	5.7e+03	1.5e-07	5.6e+03	1.5e-07	5.6e+03	1.5e-07
Y-95	1.2e+04	3.2e-07	1.1e+04	3.1e-07	1.1e+04	3.1e-07
Zirconium						
Zr-86	7.0e+02	1.9e-08	4.9e+02	1.3e-08	4.6e+02	1.2e-08
Zr-87	3.1e+03	8.5e-08	2.1e+03	5.6e-08	2.0e+03	5.4e-08
Zr-88	2.7e+01	7.4e-10	3.5e+01	9.5e-10	2.4e+01	6.6e-10
Zr-89	5.8e+02	1.6e-08	4.0e+02	1.1e-08	3.7e+02	1.0e-08
Zr-93	2.8e+01	7.6e-10	5.4e+01	1.5e-09	1.9e+01	5.0e-10
Zr-95	4.9e+01	1.3e-09	4.0e+01	1.1e-09	2.9e+01	7.9e-10
Zr-97	4.8e+02	1.3e-08	2.7e+02	7.3e-09	2.5e+02	6.8e-09
Niobium						
Nb-88	7.5e+03	2.0e-07	6.4e+03	1.7e-07	6.3e+03	1.7e-07
Nb-89	2.2e+03	6.0e-08	1.5e+03	4.1e-08	1.5e+03	4.0e-08
Nb-89m	3.7e+03	1.0e-07	2.7e+03	7.2e-08	2.6e+03	7.1e-08
Nb-90	5.6e+02	1.5e-08	3.7e+02	9.9e-09	3.5e+02	9.5e-09
Nb-91	4.2e+02	1.1e-08	3.8e+02	1.0e-08	2.3e+01	6.3e-10
Nb-91m	6.5e+02	1.8e-08	1.3e+02	3.5e-09	9.0e+01	2.4e-09
Nb-92	5.2e+00	1.4e-10	8.1e+00	2.2e-10	1.1e+00	3.0e-11
Nb-92m	5.5e+02	1.5e-08	3.4e+02	9.3e-09	3.0e+02	8.2e-09
Nb-93m	2.8e+02	7.7e-09	2.5e+02	6.8e-09	3.6e+01	9.8e-10
Nb-94	4.4e+00	1.2e-10	6.2e+00	1.7e-10	7.6e-01	2.1e-11
Nb-95	2.9e+02	8.0e-09	1.3e+02	3.6e-09	1.0e+02	2.7e-09
Nb-95m	1.2e+03	3.2e-08	4.1e+02	1.1e-08	3.4e+02	9.2e-09
Nb-96	6.1e+02	1.7e-08	3.8e+02	1.0e-08	3.5e+02	9.6e-09
Nb-97	6.3e+03	1.7e-07	4.2e+03	1.1e-07	4.1e+03	1.1e-07
Nb-98m	4.5e+03	1.2e-07	3.3e+03	9.0e-08	3.3e+03	8.9e-08
Molybdenum						
Mo-90	1.2e+03	3.3e-08	7.0e+02	1.9e-08	6.6e+02	1.8e-08
Mo-91	9.4e+03	2.5e-07	7.9e+03	2.1e-07	7.9e+03	2.1e-07
Mo-93	1.4e+03	3.9e-08	5.7e+02	1.5e-08	1.6e+01	4.4e-10
Mo-93m	2.1e+03	5.8e-08	1.4e+03	3.8e-08	1.4e+03	3.7e-08
Mo-99	6.7e+02	1.8e-08	3.0e+02	8.2e-09	2.7e+02	7.3e-09
Mo-101	9.4e+03	2.5e-07	7.5e+03	2.0e-07	7.5e+03	2.0e-07
Mo-102	7.8e+03	2.1e-07	6.6e+03	1.8e-07	6.6e+03	1.8e-07
Technetium						
Tc-93	7.4e+03	2.0e-07	5.7e+03	1.6e-07	5.7e+03	1.5e-07
Tc-93m	1.6e+04	4.3e-07	1.1e+04	3.1e-07	1.1e+04	3.1e-07
Tc-94	2.5e+03	6.7e-08	2.0e+03	5.3e-08	1.9e+03	5.2e-08
Tc-94m	5.4e+03	1.5e-07	3.9e+03	1.1e-07	3.9e+03	1.0e-07
Tc-95	2.4e+03	6.6e-08	2.0e+03	5.3e-08	1.9e+03	5.1e-08
Tc-95m	8.0e+02	2.2e-08	1.4e+02	3.8e-09	8.9e+01	2.4e-09
Tc-96	3.7e+02	1.0e-08	2.3e+02	6.3e-09	2.1e+02	5.7e-09
Tc-96m	3.8e+04	1.0e-06	2.5e+04	6.6e-07	2.3e+04	6.1e-07

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Tc-97	8.3e+03	2.2e-07	6.5e+02	1.8e-08	2.3e+01	6.2e-10
Tc-97m	1.7e+03	4.6e-08	1.3e+02	3.4e-09	7.7e+01	2.1e-09
Tc-98	2.4e+02	6.4e-09	2.0e+01	5.4e-10	8.8e-01	2.4e-11
Tc-99	1.5e+03	3.9e-08	7.3e+01	2.0e-09	4.7e+00	1.3e-10
Tc-99m	2.4e+04	6.5e-07	1.4e+04	3.7e-07	1.3e+04	3.6e-07
Tc-101	2.4e+04	6.4e-07	1.6e+04	4.4e-07	1.6e+04	4.3e-07
Tc-104	7.9e+03	2.1e-07	5.8e+03	1.6e-07	5.8e+03	1.6e-07
Ruthenium						
Ru-94	5.6e+03	1.5e-07	4.3e+03	1.2e-07	4.2e+03	1.1e-07
Ru-95	8.3e+03	2.3e-07	6.5e+03	1.7e-07	6.4e+03	1.7e-07
Ru-97	2.5e+03	6.8e-08	2.0e+03	5.5e-08	1.9e+03	5.1e-08
Ru-103	2.1e+02	5.6e-09	1.1e+02	2.9e-09	8.0e+01	2.2e-09
Ru-105	2.2e+03	5.9e-08	1.3e+03	3.5e-08	1.2e+03	3.3e-08
Ru-106	1.9e+01	5.2e-10	5.4e+00	1.5e-10	1.9e+00	5.1e-11
Rhodium						
Rh-97	1.0e+04	2.8e-07	8.1e+03	2.2e-07	8.0e+03	2.2e-07
Rh-97m	1.1e+04	2.9e-07	8.4e+03	2.3e-07	8.3e+03	2.3e-07
Rh-99	3.8e+02	1.0e-08	2.1e+02	5.6e-09	1.7e+02	4.7e-09
Rh-99m	8.5e+03	2.3e-07	6.3e+03	1.7e-07	6.2e+03	1.7e-07
Rh-100	7.8e+02	2.1e-08	6.1e+02	1.6e-08	5.9e+02	1.6e-08
Rh-101	1.2e+02	3.2e-09	7.5e+01	2.0e-09	1.8e+01	4.9e-10
Rh-101m	1.6e+03	4.4e-08	1.2e+03	3.2e-08	1.1e+03	2.9e-08
Rh-102	1.0e+02	2.8e-09	3.8e+01	1.0e-09	1.8e+01	4.8e-10
Rh-102m	2.1e+01	5.6e-10	1.5e+01	4.2e-10	3.5e+00	9.6e-11
Rh-103m	1.0e+05	2.8e-06	7.5e+04	2.0e-06	7.4e+04	2.0e-06
Rh-105	1.8e+03	4.8e-08	9.3e+02	2.5e-08	8.3e+02	2.2e-08
Rh-106m	3.0e+03	8.1e-08	2.1e+03	5.6e-08	2.0e+03	5.5e-08
Rh-107	1.5e+04	4.0e-07	1.2e+04	3.1e-07	1.2e+04	3.1e-07
Palladium						
Pd-98	8.0e+03	2.2e-07	6.2e+03	1.7e-07	6.2e+03	1.7e-07
Pd-99	1.4e+04	3.8e-07	1.1e+04	3.0e-07	1.1e+04	2.9e-07
Pd-100	4.2e+02	1.1e-08	2.3e+02	6.1e-09	2.0e+02	5.4e-09
Pd-101	6.9e+03	1.9e-07	4.4e+03	1.2e-07	4.1e+03	1.1e-07
Pd-103	3.4e+03	9.1e-08	6.5e+02	1.8e-08	5.2e+02	1.4e-08
Pd-107	4.1e+03	1.1e-07	1.4e+03	3.9e-08	7.5e+01	2.0e-09
Pd-109	2.2e+03	6.1e-08	7.1e+02	1.9e-08	6.5e+02	1.8e-08
Pd-111	9.2e+03	2.5e-07	6.6e+03	1.8e-07	6.5e+03	1.8e-07
Pd-112	5.4e+02	1.5e-08	2.3e+02	6.3e-09	2.1e+02	5.7e-09
Silver						
Ag-101	1.5e+04	3.9e-07	1.4e+04	3.9e-07	1.4e+04	3.9e-07
Ag-102	1.2e+04	3.1e-07	1.1e+04	3.1e-07	1.1e+04	3.1e-07
Ag-103	8.7e+03	2.3e-07	8.3e+03	2.2e-07	8.2e+03	2.2e-07
Ag-104	7.0e+03	1.9e-07	6.9e+03	1.9e-07	6.9e+03	1.9e-07
Ag-104m	6.1e+03	1.7e-07	6.1e+03	1.6e-07	6.1e+03	1.6e-07
Ag-105	2.8e+02	7.5e-09	1.7e+02	4.7e-09	1.4e+02	3.8e-09
Ag-106	1.2e+04	3.2e-07	1.2e+04	3.2e-07	1.2e+04	3.2e-07
Ag-106m	1.5e+02	4.0e-09	1.3e+02	3.4e-09	1.2e+02	3.3e-09

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Ag-108m	4.4e+01	1.2e-09	1.7e+01	4.6e-10	8.6e-01	2.3e-11
Ag-110m	3.4e+01	9.1e-10	1.6e+01	4.3e-10	7.9e+00	2.1e-10
Ag-111	4.6e+02	1.2e-08	2.0e+02	5.3e-09	1.7e+02	4.5e-09
Ag-112	1.1e+03	2.9e-08	1.0e+03	2.8e-08	1.0e+03	2.7e-08
Ag-113	1.3e+03	3.4e-08	1.2e+03	3.2e-08	1.1e+03	3.1e-08
Ag-115	7.0e+03	1.9e-07	6.5e+03	1.8e-07	6.5e+03	1.7e-07
Cadmium						
Cd-104	6.0e+03	1.6e-07	3.8e+03	1.0e-07	3.8e+03	1.0e-07
Cd-105	1.2e+04	3.3e-07	9.0e+03	2.4e-07	8.8e+03	2.4e-07
Cd-107	1.1e+04	3.0e-07	3.1e+03	8.3e-08	2.8e+03	7.7e-08
Cd-109	3.2e+01	8.5e-10	4.1e+01	1.1e-09	2.8e+01	7.7e-10
Cd-111m	1.7e+04	4.7e-07	1.0e+04	2.8e-07	1.0e+04	2.8e-07
Cd-113	2.8e+00	7.5e-11	5.7e+00	1.5e-10	4.2e+00	1.1e-10
Cd-113m	3.0e+00	8.0e-11	5.7e+00	1.5e-10	3.6e+00	9.9e-11
Cd-115	5.8e+02	1.6e-08	2.9e+02	7.8e-09	2.6e+02	7.0e-09
Cd-115m	4.7e+01	1.3e-09	3.1e+01	8.4e-10	2.4e+01	6.4e-10
Cd-117	2.4e+03	6.6e-08	1.3e+03	3.6e-08	1.3e+03	3.5e-08
Cd-117m	2.1e+03	5.7e-08	1.2e+03	3.2e-08	1.1e+03	3.1e-08
Cd-118	2.8e+03	7.5e-08	1.9e+03	5.2e-08	1.9e+03	5.1e-08
Indium						
In-107	1.3e+04	3.5e-07	8.7e+03	2.3e-07	8.5e+03	2.3e-07
In-108	6.7e+03	1.8e-07	5.4e+03	1.5e-07	5.4e+03	1.5e-07
In-108m	6.5e+03	1.8e-07	5.1e+03	1.4e-07	5.1e+03	1.4e-07
In-109	8.8e+03	2.4e-07	6.7e+03	1.8e-07	6.4e+03	1.7e-07
In-110	2.3e+03	6.1e-08	1.9e+03	5.1e-08	1.9e+03	5.0e-08
In-110m	5.1e+03	1.4e-07	3.7e+03	1.0e-07	3.7e+03	9.9e-08
In-111	1.6e+03	4.2e-08	1.0e+03	2.8e-08	9.6e+02	2.6e-08
In-112	3.2e+04	8.8e-07	2.6e+04	7.1e-07	2.6e+04	7.1e-07
In-112m	1.4e+04	3.9e-07	1.0e+04	2.7e-07	1.0e+04	2.7e-07
In-113m	1.5e+04	4.1e-07	9.6e+03	2.6e-07	9.4e+03	2.5e-07
In-114m	3.8e+01	1.0e-09	2.0e+01	5.4e-10	1.4e+01	3.9e-10
In-115	6.2e+00	1.7e-10	1.1e+01	2.9e-10	2.6e+00	7.1e-11
In-115m	7.1e+03	1.9e-07	3.8e+03	1.0e-07	3.7e+03	1.0e-07
In-116m	6.6e+03	1.8e-07	4.7e+03	1.3e-07	4.7e+03	1.3e-07
In-117	1.0e+04	2.8e-07	7.1e+03	1.9e-07	7.0e+03	1.9e-07
In-117m	4.5e+03	1.2e-07	2.6e+03	7.0e-08	2.5e+03	6.8e-08
In-119m	1.1e+04	3.0e-07	8.8e+03	2.4e-07	8.8e+03	2.4e-07
Tin						
Sn-108	2.3e+04	6.1e-07	1.7e+04	4.7e-07	1.7e+04	4.6e-07
Sn-109	2.8e+04	7.6e-07	2.4e+04	6.4e-07	2.4e+04	6.4e-07
Sn-110	2.3e+03	6.1e-08	1.4e+03	3.7e-08	1.3e+03	3.6e-08
Sn-111	2.1e+04	5.8e-07	1.6e+04	4.3e-07	1.6e+04	4.2e-07
Sn-113	1.6e+02	4.4e-09	6.6e+01	1.8e-09	3.8e+01	1.0e-09
Sn-113m	7.2e+04	2.0e-06	4.6e+04	1.3e-06	4.3e+04	1.2e-06
Sn-117m	8.8e+02	2.4e-08	1.9e+02	5.1e-09	1.5e+02	4.1e-09
Sn-119m	3.6e+02	9.8e-09	1.0e+02	2.8e-09	4.8e+01	1.3e-09
Sn-121	6.4e+03	1.7e-07	1.4e+03	3.7e-08	1.2e+03	3.2e-08

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μCi/mL)	(Bq/m ³)	(μCi/mL)	(Bq/m ³)	(μCi/mL)
Sn-121m	1.0e+02	2.8e-09	5.0e+01	1.4e-09	4.5e+00	1.2e-10
Sn-123	7.8e+01	2.1e-09	2.2e+01	6.1e-10	1.2e+01	3.2e-10
Sn-123m	9.4e+03	2.5e-07	6.5e+03	1.8e-07	6.4e+03	1.7e-07
Sn-125	2.6e+02	7.0e-09	7.2e+01	1.9e-09	5.6e+01	1.5e-09
Sn-126	7.7e+00	2.1e-10	4.7e+00	1.3e-10	2.6e-01	6.9e-12
Sn-127	2.9e+03	7.7e-08	1.7e+03	4.6e-08	1.6e+03	4.3e-08
Sn-128	3.1e+03	8.3e-08	2.0e+03	5.4e-08	2.0e+03	5.3e-08
Antimony						
Sb-115	2.0e+04	5.4e-07	1.5e+04	4.1e-07	1.5e+04	4.0e-07
Sb-116	1.7e+04	4.7e-07	1.5e+04	3.9e-07	1.4e+04	3.9e-07
Sb-116m	7.7e+03	2.1e-07	5.4e+03	1.5e-07	5.3e+03	1.4e-07
Sb-117	2.9e+04	7.8e-07	1.5e+04	4.1e-07	1.5e+04	4.0e-07
Sb-118m	3.0e+03	8.2e-08	2.1e+03	5.7e-08	2.1e+03	5.6e-08
Sb-119	1.2e+04	3.1e-07	8.6e+03	2.3e-07	8.1e+03	2.2e-07
Sb-120	3.2e+04	8.7e-07	2.6e+04	7.2e-07	2.6e+04	7.1e-07
Sb-120m	3.1e+02	8.3e-09	1.8e+02	4.8e-09	1.6e+02	4.3e-09
Sb-122	4.6e+02	1.2e-08	2.3e+02	6.2e-09	2.1e+02	5.6e-09
Sb-124	8.5e+01	2.3e-09	2.7e+01	7.2e-10	1.8e+01	4.8e-10
Sb-124n	4.7e+04	1.3e-06	3.2e+04	8.6e-07	2.9e+04	7.8e-07
Sb-125	1.5e+02	4.0e-09	3.9e+01	1.1e-09	8.8e+00	2.4e-10
Sb-126	1.3e+02	3.5e-09	6.1e+01	1.6e-09	5.1e+01	1.4e-09
Sb-126m	1.2e+04	3.3e-07	9.8e+03	2.7e-07	9.7e+03	2.6e-07
Sb-127	3.7e+02	1.0e-08	1.7e+02	4.6e-09	1.5e+02	4.0e-09
Sb-128	9.2e+02	2.5e-08	5.5e+02	1.5e-08	5.3e+02	1.4e-08
Sb-128m	1.6e+04	4.2e-07	1.3e+04	3.6e-07	1.3e+04	3.6e-07
Sb-129	1.8e+03	4.9e-08	9.5e+02	2.6e-08	9.0e+02	2.4e-08
Sb-130	5.1e+03	1.4e-07	3.8e+03	1.0e-07	3.7e+03	1.0e-07
Sb-131	3.7e+03	1.0e-07	3.9e+03	1.1e-07	4.2e+03	1.1e-07
Tellurium						
Te-114	8.9e+03	2.4e-07	6.7e+03	1.8e-07	6.6e+03	1.8e-07
Te-116	3.2e+03	8.6e-08	1.7e+03	4.6e-08	1.7e+03	4.5e-08
Te-117	1.1e+04	2.8e-07	7.0e+03	1.9e-07	6.9e+03	1.9e-07
Te-118	2.1e+02	5.7e-09	8.5e+01	2.3e-09	7.3e+01	2.0e-09
Te-119	3.0e+03	8.1e-08	2.1e+03	5.7e-08	2.0e+03	5.4e-08
Te-119m	5.5e+02	1.5e-08	3.3e+02	9.0e-09	3.0e+02	8.2e-09
Te-121	7.3e+02	2.0e-08	3.3e+02	9.0e-09	2.7e+02	7.3e-09
Te-121m	3.5e+02	9.4e-09	5.4e+01	1.5e-09	2.6e+01	7.0e-10
Te-123	2.2e+04	6.0e-07	5.0e+03	1.4e-07	2.3e+02	6.3e-09
Te-123m	5.4e+02	1.5e-08	8.5e+01	2.3e-09	4.8e+01	1.3e-09
Te-125m	6.9e+02	1.9e-08	1.2e+02	3.3e-09	8.4e+01	2.3e-09
Te-127	4.7e+03	1.3e-07	1.9e+03	5.0e-08	1.7e+03	4.7e-08
Te-127m	2.7e+02	7.3e-09	4.2e+01	1.1e-09	2.4e+01	6.4e-10
Te-129	7.9e+03	2.1e-07	4.5e+03	1.2e-07	4.4e+03	1.2e-07
Te-129m	1.7e+02	4.6e-09	4.0e+01	1.1e-09	2.9e+01	7.7e-10
Te-131	4.6e+03	1.2e-07	5.9e+03	1.6e-07	6.9e+03	1.9e-07
Te-131m	1.7e+02	4.7e-09	2.3e+02	6.1e-09	2.5e+02	6.9e-09
Te-132	9.7e+01	2.6e-09	1.0e+02	2.8e-09	1.0e+02	2.8e-09

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Te-133	6.2e+03	1.7e-07	9.6e+03	2.6e-07	1.1e+04	3.0e-07
Te-133m	1.6e+03	4.3e-08	2.4e+03	6.6e-08	2.9e+03	7.9e-08
Te-134	3.9e+03	1.1e-07	3.1e+03	8.5e-08	3.1e+03	8.5e-08
Iodine						
I-118	8.1e+03	2.2e-07	6.1e+03	1.6e-07	6.0e+03	1.6e-07
I-119	1.6e+04	4.4e-07	1.2e+04	3.3e-07	1.2e+04	3.3e-07
I-120	1.7e+03	4.7e-08	1.9e+03	5.2e-08	1.9e+03	5.2e-08
I-120m	3.1e+03	8.4e-08	2.9e+03	7.9e-08	2.9e+03	8.0e-08
I-121	8.4e+03	2.3e-07	9.8e+03	2.6e-07	9.8e+03	2.6e-07
I-123	1.6e+03	4.4e-08	3.4e+03	9.3e-08	4.4e+03	1.2e-07
I-124	3.3e+01	8.9e-10	1.1e+02	2.9e-09	2.4e+02	6.4e-09
I-125	2.4e+01	6.5e-10	7.7e+01	2.1e-09	3.1e+02	8.4e-09
I-126	1.3e+01	3.6e-10	4.6e+01	1.2e-09	1.5e+02	4.0e-09
I-128	1.1e+04	3.0e-07	8.4e+03	2.3e-07	8.4e+03	2.3e-07
I-129	3.5e+00	9.5e-11	8.4e+00	2.3e-10	5.5e+00	1.5e-10
I-130	2.1e+02	5.6e-09	4.5e+02	1.2e-08	5.9e+02	1.6e-08
I-131	1.7e+01	4.5e-10	5.9e+01	1.6e-09	1.7e+02	4.7e-09
I-132	1.4e+03	3.8e-08	1.8e+03	4.9e-08	1.9e+03	5.1e-08
I-132m	1.8e+03	4.7e-08	2.4e+03	6.6e-08	2.6e+03	7.0e-08
I-133	9.2e+01	2.5e-09	2.9e+02	7.7e-09	5.2e+02	1.4e-08
I-134	4.2e+03	1.1e-07	3.7e+03	1.0e-07	3.7e+03	1.0e-07
I-135	4.3e+02	1.2e-08	8.8e+02	2.4e-08	1.1e+03	2.9e-08
Cesium						
Cs-125	1.5e+04	4.1e-07	9.0e+03	2.4e-07	8.9e+03	2.4e-07
Cs-127	1.1e+04	3.0e-07	6.5e+03	1.8e-07	6.3e+03	1.7e-07
Cs-129	4.4e+03	1.2e-07	2.8e+03	7.7e-08	2.7e+03	7.2e-08
Cs-130	2.1e+04	5.8e-07	1.3e+04	3.5e-07	1.3e+04	3.5e-07
Cs-131	5.8e+03	1.6e-07	3.9e+03	1.1e-07	3.5e+03	9.5e-08
Cs-132	6.2e+02	1.7e-08	5.1e+02	1.4e-08	4.8e+02	1.3e-08
Cs-134	2.5e+01	6.7e-10	1.6e+01	4.4e-10	4.8e+00	1.3e-10
Cs-134m	1.3e+04	3.6e-07	4.4e+03	1.2e-07	3.9e+03	1.0e-07
Cs-135	2.6e+02	7.0e-09	7.4e+01	2.0e-09	5.4e+00	1.5e-10
Cs-135m	2.3e+04	6.1e-07	1.7e+04	4.5e-07	1.7e+04	4.5e-07
Cs-136	1.1e+02	3.1e-09	8.4e+01	2.3e-09	7.6e+01	2.1e-09
Cs-137	2.6e+01	7.0e-10	1.7e+01	4.6e-10	1.4e+00	3.8e-11
Cs-138	6.2e+03	1.7e-07	3.9e+03	1.0e-07	3.8e+03	1.0e-07
Barium						
Ba-124	8.4e+03	2.3e-07	7.5e+03	2.0e-07	7.5e+03	2.0e-07
Ba-126	2.1e+03	5.7e-08	1.6e+03	4.2e-08	1.5e+03	4.2e-08
Ba-127	2.0e+04	5.4e-07	1.7e+04	4.7e-07	1.7e+04	4.6e-07
Ba-128	3.4e+02	9.1e-09	1.6e+02	4.3e-09	1.4e+02	3.8e-09
Ba-129	1.1e+04	3.0e-07	7.4e+03	2.0e-07	7.2e+03	2.0e-07
Ba-129m	7.4e+03	2.0e-07	5.6e+03	1.5e-07	5.5e+03	1.5e-07
Ba-131	1.1e+03	3.0e-08	3.3e+02	8.8e-09	2.7e+02	7.2e-09
Ba-131m	3.8e+04	1.0e-06	2.9e+04	8.0e-07	2.9e+04	7.8e-07
Ba-133	1.0e+02	2.8e-09	4.6e+01	1.3e-09	5.8e+00	1.6e-10
Ba-133m	2.6e+03	6.9e-08	7.9e+02	2.1e-08	6.7e+02	1.8e-08

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Ba-135m	3.0e+03	8.2e-08	9.9e+02	2.7e-08	8.8e+02	2.4e-08
Ba-139	4.0e+03	1.1e-07	2.7e+03	7.4e-08	2.7e+03	7.3e-08
Ba-140	2.2e+02	6.0e-09	4.7e+01	1.3e-09	3.7e+01	9.9e-10
Ba-141	7.2e+03	1.9e-07	5.4e+03	1.5e-07	5.3e+03	1.4e-07
Ba-142	1.2e+04	3.3e-07	9.7e+03	2.6e-07	9.5e+03	2.6e-07
Lanthanum						
La-129	1.6e+04	4.4e-07	1.6e+04	4.3e-07	1.6e+04	4.3e-07
La-131	9.6e+03	2.6e-07	8.9e+03	2.4e-07	8.7e+03	2.3e-07
La-132	1.2e+03	3.4e-08	1.2e+03	3.2e-08	1.2e+03	3.2e-08
La-132m	1.1e+04	3.0e-07	1.1e+04	2.9e-07	1.1e+04	2.8e-07
La-133	1.6e+04	4.3e-07	1.5e+04	4.1e-07	1.4e+04	3.7e-07
La-135	2.0e+04	5.3e-07	1.7e+04	4.7e-07	1.7e+04	4.6e-07
La-137	2.4e+01	6.4e-10	3.1e+01	8.5e-10	1.7e+01	4.6e-10
La-138	1.0e+00	2.7e-11	1.4e+00	3.7e-11	1.1e+00	2.9e-11
La-140	2.8e+02	7.5e-09	2.1e+02	5.8e-09	2.0e+02	5.4e-09
La-141	1.3e+03	3.4e-08	1.2e+03	3.1e-08	1.1e+03	3.0e-08
La-142	2.1e+03	5.8e-08	2.1e+03	5.7e-08	2.1e+03	5.6e-08
La-143	8.7e+03	2.3e-07	8.1e+03	2.2e-07	7.9e+03	2.1e-07
Cerium						
Ce-130	5.2e+03	1.4e-07	5.1e+03	1.4e-07	5.1e+03	1.4e-07
Ce-131	1.5e+04	4.1e-07	1.5e+04	4.0e-07	1.5e+04	4.0e-07
Ce-132	1.8e+03	5.0e-08	1.7e+03	4.5e-08	1.6e+03	4.4e-08
Ce-133	3.9e+03	1.0e-07	3.7e+03	1.0e-07	3.7e+03	9.9e-08
Ce-133m	2.3e+03	6.1e-08	2.1e+03	5.8e-08	2.1e+03	5.6e-08
Ce-134	2.4e+02	6.4e-09	1.5e+02	4.0e-09	1.4e+02	3.7e-09
Ce-135	1.8e+03	4.8e-08	1.6e+03	4.3e-08	1.5e+03	4.2e-08
Ce-137	3.3e+04	8.8e-07	3.0e+04	8.2e-07	3.0e+04	8.1e-07
Ce-137m	1.1e+03	3.1e-08	7.6e+02	2.1e-08	7.1e+02	1.9e-08
Ce-139	1.6e+02	4.3e-09	1.2e+02	3.3e-09	9.2e+01	2.5e-09
Ce-141	2.8e+02	7.4e-09	1.2e+02	3.2e-09	9.4e+01	2.6e-09
Ce-143	5.5e+02	1.5e-08	3.5e+02	9.4e-09	3.1e+02	8.5e-09
Ce-144	7.6e+00	2.1e-10	4.7e+00	1.3e-10	2.6e+00	6.9e-11
Praseodymium						
Pr-134	1.0e+04	2.8e-07	9.8e+03	2.7e-07	9.7e+03	2.6e-07
Pr-134m	6.0e+03	1.6e-07	5.6e+03	1.5e-07	5.6e+03	1.5e-07
Pr-135	9.2e+03	2.5e-07	9.1e+03	2.4e-07	9.0e+03	2.4e-07
Pr-136	1.4e+04	3.9e-07	1.4e+04	3.8e-07	1.4e+04	3.8e-07
Pr-137	1.0e+04	2.8e-07	1.0e+04	2.7e-07	1.0e+04	2.7e-07
Pr-138m	3.2e+03	8.6e-08	3.1e+03	8.4e-08	3.1e+03	8.4e-08
Pr-139	1.3e+04	3.5e-07	1.2e+04	3.2e-07	1.1e+04	3.0e-07
Pr-142	5.6e+02	1.5e-08	4.4e+02	1.2e-08	4.2e+02	1.1e-08
Pr-142m	4.5e+04	1.2e-06	3.5e+04	9.5e-07	3.3e+04	9.0e-07
Pr-143	3.4e+02	9.2e-09	1.4e+02	3.9e-09	1.2e+02	3.3e-09
Pr-144	8.6e+03	2.3e-07	8.5e+03	2.3e-07	8.5e+03	2.3e-07
Pr-145	1.3e+03	3.6e-08	1.2e+03	3.2e-08	1.2e+03	3.2e-08
Pr-146	5.5e+03	1.5e-07	5.4e+03	1.5e-07	5.4e+03	1.5e-07
Pr-147	1.1e+04	3.1e-07	1.1e+04	2.9e-07	1.1e+04	2.9e-07

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Neodymium						
Nd-135	7.0e+03	1.9e-07	6.9e+03	1.9e-07	6.9e+03	1.9e-07
Nd-136	3.5e+03	9.5e-08	3.5e+03	9.4e-08	3.5e+03	9.3e-08
Nd-137	7.2e+03	1.9e-07	7.0e+03	1.9e-07	7.0e+03	1.9e-07
Nd-138	8.5e+02	2.3e-08	7.9e+02	2.1e-08	7.8e+02	2.1e-08
Nd-139	1.8e+04	5.0e-07	1.8e+04	4.9e-07	1.8e+04	4.8e-07
Nd-139m	1.8e+03	4.8e-08	1.6e+03	4.4e-08	1.6e+03	4.3e-08
Nd-140	3.1e+02	8.4e-09	1.9e+02	5.2e-09	1.7e+02	4.7e-09
Nd-141	5.2e+04	1.4e-06	5.0e+04	1.4e-06	5.0e+04	1.3e-06
Nd-144	2.2e-02	5.9e-13	2.8e-02	7.7e-13	1.6e-02	4.3e-13
Nd-147	3.3e+02	8.9e-09	1.5e+02	4.0e-09	1.2e+02	3.3e-09
Nd-149	2.7e+03	7.2e-08	2.4e+03	6.4e-08	2.3e+03	6.3e-08
Nd-151	1.3e+04	3.6e-07	1.2e+04	3.4e-07	1.2e+04	3.3e-07
Nd-152	7.5e+03	2.0e-07	7.5e+03	2.0e-07	7.5e+03	2.0e-07
Promethium						
Pm-141	1.2e+04	3.3e-07	1.2e+04	3.3e-07	1.2e+04	3.3e-07
Pm-143	7.1e+01	1.9e-09	7.3e+01	2.0e-09	6.1e+01	1.7e-09
Pm-144	1.2e+01	3.2e-10	1.3e+01	3.4e-10	1.1e+01	3.0e-10
Pm-145	3.2e+01	8.6e-10	4.1e+01	1.1e-09	2.5e+01	6.8e-10
Pm-146	4.9e+00	1.3e-10	6.0e+00	1.6e-10	4.4e+00	1.2e-10
Pm-147	6.7e+01	1.8e-09	5.7e+01	1.6e-09	3.2e+01	8.6e-10
Pm-148	2.1e+02	5.6e-09	1.1e+02	3.0e-09	9.8e+01	2.7e-09
Pm-148m	5.2e+01	1.4e-09	3.5e+01	9.5e-10	3.0e+01	8.0e-10
Pm-149	7.2e+02	1.9e-08	4.3e+02	1.2e-08	3.9e+02	1.1e-08
Pm-150	1.6e+03	4.2e-08	1.5e+03	4.0e-08	1.5e+03	4.0e-08
Pm-151	8.1e+02	2.2e-08	5.8e+02	1.6e-08	5.4e+02	1.5e-08
Samarium						
Sm-140	5.4e+03	1.5e-07	5.2e+03	1.4e-07	5.1e+03	1.4e-07
Sm-141	1.1e+04	3.1e-07	1.1e+04	3.1e-07	1.1e+04	3.1e-07
Sm-141m	5.9e+03	1.6e-07	5.8e+03	1.6e-07	5.8e+03	1.6e-07
Sm-142	2.2e+03	5.9e-08	2.1e+03	5.8e-08	2.1e+03	5.7e-08
Sm-145	9.7e+01	2.6e-09	9.5e+01	2.6e-09	6.8e+01	1.8e-09
Sm-146	1.6e-02	4.4e-13	2.1e-02	5.7e-13	1.1e-02	3.1e-13
Sm-147	1.8e-02	4.9e-13	2.3e-02	6.3e-13	1.3e-02	3.4e-13
Sm-148	2.1e-02	5.7e-13	2.7e-02	7.4e-13	1.5e-02	4.1e-13
Sm-151	4.4e+01	1.2e-09	5.6e+01	1.5e-09	3.2e+01	8.7e-10
Sm-153	7.7e+02	2.1e-08	4.5e+02	1.2e-08	4.0e+02	1.1e-08
Sm-155	1.0e+04	2.7e-07	1.0e+04	2.7e-07	1.0e+04	2.7e-07
Sm-156	1.5e+03	4.1e-08	1.0e+03	2.8e-08	9.4e+02	2.5e-08
Europium						
Eu-145	4.4e+02	1.2e-08	3.2e+02	8.7e-09	2.9e+02	7.9e-09
Eu-146	2.8e+02	7.6e-09	2.1e+02	5.7e-09	2.0e+02	5.4e-09
Eu-147	3.8e+02	1.0e-08	2.1e+02	5.7e-09	1.8e+02	4.8e-09
Eu-148	5.7e+01	1.5e-09	4.1e+01	1.1e-09	3.3e+01	9.0e-10
Eu-149	5.4e+02	1.4e-08	3.7e+02	9.9e-09	2.8e+02	7.5e-09
Eu-150	1.8e+00	5.0e-11	2.4e+00	6.4e-11	1.2e+00	3.3e-11
Eu-150m	1.5e+03	4.1e-08	1.2e+03	3.4e-08	1.2e+03	3.2e-08

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Eu-152	3.2e+00	8.6e-11	3.9e+00	1.0e-10	1.8e+00	5.0e-11
Eu-152m	1.2e+03	3.2e-08	1.0e+03	2.8e-08	1.0e+03	2.7e-08
Eu-152n	2.5e+04	6.9e-07	2.5e+04	6.7e-07	2.2e+04	6.0e-07
Eu-154	3.2e+00	8.8e-11	3.7e+00	9.9e-11	1.7e+00	4.5e-11
Eu-154m	6.2e+04	1.7e-06	6.3e+04	1.7e-06	5.2e+04	1.4e-06
Eu-155	4.0e+01	1.1e-09	3.8e+01	1.0e-09	1.9e+01	5.1e-10
Eu-156	1.3e+02	3.6e-09	6.3e+01	1.7e-09	5.3e+01	1.4e-09
Eu-157	9.8e+02	2.6e-08	7.9e+02	2.1e-08	7.5e+02	2.0e-08
Eu-158	3.7e+03	9.9e-08	3.6e+03	9.7e-08	3.6e+03	9.7e-08
Eu-159	8.3e+03	2.2e-07	8.0e+03	2.2e-07	7.9e+03	2.1e-07
Gadolinium						
Gd-145	1.3e+04	3.4e-07	1.2e+04	3.3e-07	1.2e+04	3.3e-07
Gd-146	5.4e+01	1.5e-09	3.0e+01	8.1e-10	2.3e+01	6.3e-10
Gd-147	6.6e+02	1.8e-08	5.1e+02	1.4e-08	4.7e+02	1.3e-08
Gd-148	2.5e-02	6.9e-13	2.8e-02	7.5e-13	1.0e-02	2.7e-13
Gd-149	5.3e+02	1.4e-08	3.0e+02	8.0e-09	2.6e+02	6.9e-09
Gd-150	2.6e-02	7.1e-13	3.1e-02	8.3e-13	1.1e-02	2.9e-13
Gd-151	3.4e+02	9.2e-09	2.1e+02	5.7e-09	1.5e+02	4.0e-09
Gd-152	3.4e-02	9.1e-13	4.1e-02	1.1e-12	1.4e-02	3.9e-13
Gd-153	1.5e+02	4.1e-09	9.6e+01	2.6e-09	6.1e+01	1.6e-09
Gd-159	1.2e+03	3.3e-08	9.3e+02	2.5e-08	8.8e+02	2.4e-08
Terbium						
Tb-147	3.3e+03	8.8e-08	3.0e+03	8.1e-08	2.9e+03	7.9e-08
Tb-148	2.8e+03	7.5e-08	2.8e+03	7.5e-08	2.2e+03	5.9e-08
Tb-149	3.5e+01	9.3e-10	3.0e+01	8.0e-10	2.9e+01	7.7e-10
Tb-150	2.2e+03	6.0e-08	2.1e+03	5.7e-08	2.1e+03	5.7e-08
Tb-151	1.2e+03	3.2e-08	9.3e+02	2.5e-08	8.8e+02	2.4e-08
Tb-152	8.4e+02	2.3e-08	7.1e+02	1.9e-08	6.9e+02	1.9e-08
Tb-153	1.5e+03	4.1e-08	9.4e+02	2.5e-08	8.3e+02	2.2e-08
Tb-154	7.3e+02	2.0e-08	6.2e+02	1.7e-08	6.0e+02	1.6e-08
Tb-155	1.7e+03	4.5e-08	8.7e+02	2.4e-08	7.7e+02	2.1e-08
Tb-156	3.0e+02	8.0e-09	1.8e+02	5.0e-09	1.7e+02	4.5e-09
Tb-156m	1.9e+03	5.1e-08	1.0e+03	2.8e-08	9.0e+02	2.4e-08
Tb-156n	2.7e+03	7.2e-08	2.0e+03	5.4e-08	1.9e+03	5.0e-08
Tb-157	1.6e+02	4.2e-09	1.9e+02	5.3e-09	7.1e+01	1.9e-09
Tb-158	2.1e+00	5.5e-11	2.7e+00	7.2e-11	1.3e+00	3.6e-11
Tb-160	6.3e+01	1.7e-09	3.2e+01	8.6e-10	2.3e+01	6.3e-10
Tb-161	6.7e+02	1.8e-08	2.7e+02	7.2e-09	2.3e+02	6.2e-09
Tb-163	1.2e+04	3.3e-07	1.2e+04	3.3e-07	1.2e+04	3.3e-07
Dysprosium						
Dy-151	9.6e+02	2.6e-08	9.4e+02	2.6e-08	9.4e+02	2.5e-08
Dy-152	3.7e+03	9.9e-08	3.2e+03	8.6e-08	3.1e+03	8.3e-08
Dy-153	2.3e+03	6.1e-08	1.9e+03	5.0e-08	1.8e+03	4.8e-08
Dy-154	2.4e-02	6.5e-13	2.8e-02	7.5e-13	1.0e-02	2.7e-13
Dy-155	3.3e+03	9.0e-08	2.7e+03	7.3e-08	2.6e+03	6.9e-08
Dy-157	8.2e+03	2.2e-07	7.5e+03	2.0e-07	7.4e+03	2.0e-07
Dy-159	6.1e+02	1.7e-08	3.8e+02	1.0e-08	2.6e+02	7.0e-09

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Dy-165	3.1e+03	8.4e-08	3.0e+03	8.0e-08	2.9e+03	7.9e-08
Dy-166	3.7e+02	1.0e-08	1.5e+02	3.9e-09	1.3e+02	3.4e-09
Holmium						
Ho-154	1.2e+04	3.3e-07	1.2e+04	3.3e-07	1.2e+04	3.3e-07
Ho-155	9.4e+03	2.5e-07	8.8e+03	2.4e-07	8.6e+03	2.3e-07
Ho-156	3.6e+03	9.8e-08	3.6e+03	9.6e-08	3.5e+03	9.6e-08
Ho-157	5.1e+04	1.4e-06	5.0e+04	1.4e-06	5.0e+04	1.4e-06
Ho-159	3.6e+04	9.7e-07	3.5e+04	9.6e-07	3.5e+04	9.5e-07
Ho-160	2.0e+04	5.4e-07	2.0e+04	5.3e-07	2.0e+04	5.3e-07
Ho-161	3.8e+04	1.0e-06	3.6e+04	9.8e-07	3.6e+04	9.7e-07
Ho-162	7.9e+04	2.1e-06	7.8e+04	2.1e-06	7.8e+04	2.1e-06
Ho-162m	1.1e+04	3.1e-07	1.1e+04	3.0e-07	1.1e+04	2.9e-07
Ho-163	2.8e+03	7.7e-08	3.5e+03	9.6e-08	1.1e+03	3.1e-08
Ho-164	2.3e+04	6.2e-07	2.2e+04	6.1e-07	2.2e+04	6.0e-07
Ho-164m	1.5e+04	4.1e-07	1.5e+04	4.0e-07	1.5e+04	4.0e-07
Ho-166	5.3e+02	1.4e-08	3.7e+02	9.9e-09	3.4e+02	9.3e-09
Ho-166m	1.0e+00	2.7e-11	1.3e+00	3.5e-11	6.9e-01	1.9e-11
Ho-167	3.1e+03	8.3e-08	2.9e+03	7.8e-08	2.9e+03	7.7e-08
Erbium						
Er-156	9.7e+03	2.6e-07	9.5e+03	2.6e-07	9.4e+03	2.5e-07
Er-159	1.4e+04	3.8e-07	1.4e+04	3.7e-07	1.4e+04	3.7e-07
Er-161	5.1e+03	1.4e-07	4.8e+03	1.3e-07	4.7e+03	1.3e-07
Er-163	2.2e+05	5.8e-06	2.1e+05	5.7e-06	2.1e+05	5.7e-06
Er-165	3.3e+04	9.0e-07	2.9e+04	7.9e-07	2.8e+04	7.6e-07
Er-169	1.1e+03	3.0e-08	4.1e+02	1.1e-08	3.5e+02	9.3e-09
Er-171	1.2e+03	3.3e-08	1.1e+03	2.9e-08	1.0e+03	2.8e-08
Er-172	4.8e+02	1.3e-08	2.3e+02	6.1e-09	2.0e+02	5.4e-09
Thulium						
Tm-161	9.3e+03	2.5e-07	9.0e+03	2.4e-07	9.0e+03	2.4e-07
Tm-162	1.0e+04	2.7e-07	1.0e+04	2.7e-07	1.0e+04	2.7e-07
Tm-163	6.6e+03	1.8e-07	6.4e+03	1.7e-07	6.3e+03	1.7e-07
Tm-165	1.3e+03	3.6e-08	9.8e+02	2.6e-08	9.2e+02	2.5e-08
Tm-166	1.5e+03	3.9e-08	1.3e+03	3.5e-08	1.3e+03	3.5e-08
Tm-167	7.1e+02	1.9e-08	3.0e+02	8.1e-09	2.6e+02	6.9e-09
Tm-168	6.3e+01	1.7e-09	3.8e+01	1.0e-09	2.8e+01	7.6e-10
Tm-170	7.6e+01	2.0e-09	3.3e+01	8.8e-10	2.0e+01	5.4e-10
Tm-171	2.6e+02	7.2e-09	2.0e+02	5.4e-09	1.1e+02	3.0e-09
Tm-172	3.8e+02	1.0e-08	2.2e+02	5.9e-09	1.9e+02	5.3e-09
Tm-173	1.5e+03	4.2e-08	1.3e+03	3.6e-08	1.3e+03	3.5e-08
Tm-175	1.2e+04	3.2e-07	1.2e+04	3.1e-07	1.1e+04	3.1e-07
Ytterbium						
Yb-162	1.1e+04	3.0e-07	1.1e+04	2.9e-07	1.1e+04	2.9e-07
Yb-163	2.6e+04	7.1e-07	2.6e+04	7.0e-07	2.6e+04	6.9e-07
Yb-164	4.0e+03	1.1e-07	3.9e+03	1.1e-07	3.9e+03	1.1e-07
Yb-166	4.6e+02	1.2e-08	2.9e+02	7.9e-09	2.7e+02	7.2e-09
Yb-167	4.0e+04	1.1e-06	3.6e+04	9.8e-07	3.5e+04	9.5e-07
Yb-169	2.4e+02	6.4e-09	1.0e+02	2.7e-09	7.9e+01	2.1e-09

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Yb-175	1.2e+03	3.2e-08	5.4e+02	1.5e-08	4.7e+02	1.3e-08
Yb-177	3.3e+03	8.8e-08	2.9e+03	8.0e-08	2.9e+03	7.8e-08
Yb-178	2.5e+03	6.8e-08	2.4e+03	6.5e-08	2.4e+03	6.5e-08
Lutetium						
Lu-165	1.6e+04	4.3e-07	1.6e+04	4.2e-07	1.5e+04	4.2e-07
Lu-167	6.8e+03	1.8e-07	6.4e+03	1.7e-07	6.3e+03	1.7e-07
Lu-169	7.8e+02	2.1e-08	5.5e+02	1.5e-08	5.0e+02	1.3e-08
Lu-170	4.3e+02	1.2e-08	3.3e+02	8.8e-09	3.1e+02	8.3e-09
Lu-171	4.9e+02	1.3e-08	2.4e+02	6.6e-09	2.1e+02	5.8e-09
Lu-172	2.5e+02	6.7e-09	1.4e+02	3.8e-09	1.3e+02	3.4e-09
Lu-173	6.4e+01	1.7e-09	5.4e+01	1.5e-09	3.2e+01	8.7e-10
Lu-174	4.8e+01	1.3e-09	4.5e+01	1.2e-09	2.4e+01	6.5e-10
Lu-174m	1.1e+02	3.0e-09	6.0e+01	1.6e-09	3.8e+01	1.0e-09
Lu-176	1.9e+00	5.1e-11	2.3e+00	6.3e-11	9.1e-01	2.5e-11
Lu-176m	2.0e+03	5.4e-08	1.9e+03	5.1e-08	1.8e+03	5.0e-08
Lu-177	8.9e+02	2.4e-08	3.6e+02	9.8e-09	3.1e+02	8.4e-09
Lu-177m	3.1e+01	8.4e-10	1.8e+01	4.8e-10	1.2e+01	3.1e-10
Lu-178	6.9e+03	1.9e-07	6.8e+03	1.8e-07	6.8e+03	1.8e-07
Lu-178m	6.9e+03	1.9e-07	6.9e+03	1.9e-07	6.8e+03	1.8e-07
Lu-179	2.0e+03	5.3e-08	1.8e+03	4.9e-08	1.8e+03	4.8e-08
Hafnium						
Hf-170	1.4e+03	3.7e-08	7.4e+02	2.0e-08	6.8e+02	1.8e-08
Hf-172	4.2e+00	1.1e-10	6.4e+00	1.7e-10	4.0e+00	1.1e-10
Hf-173	2.8e+03	7.5e-08	1.4e+03	3.9e-08	1.3e+03	3.4e-08
Hf-174	1.7e-02	4.7e-13	3.2e-02	8.6e-13	1.2e-02	3.3e-13
Hf-175	1.6e+02	4.3e-09	1.3e+02	3.6e-09	1.0e+02	2.7e-09
Hf-177m	3.8e+03	1.0e-07	2.4e+03	6.5e-08	2.4e+03	6.4e-08
Hf-178m	5.2e-01	1.4e-11	1.0e+00	2.8e-11	6.7e-01	1.8e-11
Hf-179m	1.3e+02	3.5e-09	7.3e+01	2.0e-09	5.9e+01	1.6e-09
Hf-180m	3.7e+03	9.9e-08	1.8e+03	4.8e-08	1.7e+03	4.6e-08
Hf-181	1.1e+02	3.0e-09	6.2e+01	1.7e-09	4.8e+01	1.3e-09
Hf-182	4.9e-01	1.3e-11	1.0e+00	2.7e-11	6.2e-01	1.7e-11
Hf-182m	7.4e+03	2.0e-07	4.3e+03	1.2e-07	4.1e+03	1.1e-07
Hf-183	6.2e+03	1.7e-07	3.6e+03	9.9e-08	3.5e+03	9.4e-08
Hf-184	1.6e+03	4.4e-08	7.5e+02	2.0e-08	7.0e+02	1.9e-08
Tantalum						
Ta-172	7.3e+03	2.0e-07	5.5e+03	1.5e-07	5.4e+03	1.5e-07
Ta-173	5.8e+03	1.6e-07	2.9e+03	7.8e-08	2.7e+03	7.4e-08
Ta-174	6.4e+03	1.7e-07	4.1e+03	1.1e-07	4.0e+03	1.1e-07
Ta-175	2.6e+03	7.0e-08	1.6e+03	4.3e-08	1.5e+03	4.0e-08
Ta-176	2.0e+03	5.4e-08	1.2e+03	3.3e-08	1.2e+03	3.2e-08
Ta-177	7.7e+03	2.1e-07	2.7e+03	7.3e-08	2.4e+03	6.4e-08
Ta-178m	5.8e+03	1.6e-07	3.2e+03	8.6e-08	3.1e+03	8.4e-08
Ta-179	7.6e+02	2.1e-08	5.4e+02	1.5e-08	1.9e+02	5.1e-09
Ta-180	1.6e+04	4.3e-07	5.8e+03	1.6e-07	5.4e+03	1.5e-07
Ta-182	6.8e+01	1.8e-09	2.9e+01	7.8e-10	1.7e+01	4.7e-10
Ta-182m	1.5e+04	4.0e-07	1.1e+04	3.0e-07	1.1e+04	2.9e-07

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Ta-183	6.6e+02	1.8e-08	1.7e+02	4.5e-09	1.4e+02	3.8e-09
Ta-184	1.2e+03	3.2e-08	5.9e+02	1.6e-08	5.6e+02	1.5e-08
Ta-185	5.7e+03	1.5e-07	3.7e+03	1.0e-07	3.6e+03	9.8e-08
Ta-186	1.3e+04	3.6e-07	1.1e+04	3.1e-07	1.1e+04	3.0e-07
Tungsten						
W-177	1.0e+04	2.8e-07	5.5e+03	1.5e-07	5.3e+03	1.4e-07
W-178	4.8e+03	1.3e-07	4.3e+02	1.2e-08	3.3e+02	8.9e-09
W-179	3.1e+05	8.3e-06	2.3e+05	6.3e-06	2.2e+05	6.1e-06
W-181	8.1e+03	2.2e-07	7.5e+02	2.0e-08	3.9e+02	1.0e-08
W-185	2.3e+03	6.3e-08	1.2e+02	3.4e-09	7.6e+01	2.1e-09
W-187	2.1e+03	5.8e-08	6.4e+02	1.7e-08	5.7e+02	1.5e-08
W-188	3.1e+02	8.4e-09	1.9e+01	5.1e-10	1.1e+01	3.0e-10
W-190	3.9e+03	1.0e-07	2.8e+03	7.5e-08	2.7e+03	7.4e-08
Rhenium						
Re-178	1.6e+04	4.3e-07	1.4e+04	3.7e-07	1.3e+04	3.6e-07
Re-179	2.9e+04	7.8e-07	2.3e+04	6.1e-07	2.2e+04	6.0e-07
Re-181	1.4e+03	3.7e-08	9.4e+02	2.5e-08	8.9e+02	2.4e-08
Re-182	4.1e+02	1.1e-08	2.0e+02	5.5e-09	1.8e+02	4.9e-09
Re-182m	1.7e+03	4.7e-08	1.1e+03	3.1e-08	1.1e+03	2.9e-08
Re-183	1.1e+03	2.9e-08	1.1e+02	3.0e-09	7.2e+01	1.9e-09
Re-184	6.0e+02	1.6e-08	1.1e+02	3.1e-09	8.1e+01	2.2e-09
Re-184m	6.3e+02	1.7e-08	3.6e+01	9.7e-10	1.6e+01	4.3e-10
Re-186	6.9e+02	1.9e-08	3.1e+02	8.5e-09	2.8e+02	7.5e-09
Re-186m	5.8e+02	1.6e-08	1.7e+01	4.5e-10	8.2e-01	2.2e-11
Re-187	3.2e+05	8.7e-06	2.7e+04	7.3e-07	1.2e+03	3.2e-08
Re-188	6.3e+02	1.7e-08	4.7e+02	1.3e-08	4.6e+02	1.2e-08
Re-188m	2.2e+04	6.0e-07	1.7e+04	4.5e-07	1.6e+04	4.4e-07
Re-189	1.1e+03	3.0e-08	7.0e+02	1.9e-08	6.6e+02	1.8e-08
Re-190m	1.5e+03	4.1e-08	1.1e+03	3.0e-08	1.1e+03	3.0e-08
Osmium						
Os-180	2.1e+04	5.7e-07	1.6e+04	4.3e-07	1.6e+04	4.3e-07
Os-181	6.4e+03	1.7e-07	3.9e+03	1.1e-07	3.8e+03	1.0e-07
Os-182	1.2e+03	3.2e-08	6.1e+02	1.7e-08	5.6e+02	1.5e-08
Os-183	3.4e+03	9.1e-08	1.4e+03	3.8e-08	1.3e+03	3.4e-08
Os-183m	3.2e+03	8.5e-08	1.8e+03	4.8e-08	1.6e+03	4.4e-08
Os-185	3.5e+02	9.3e-09	1.1e+02	2.9e-09	6.3e+01	1.7e-09
Os-186	5.9e-01	1.6e-11	1.4e-01	3.9e-12	1.2e-02	3.1e-13
Os-189m	1.9e+05	5.2e-06	8.4e+04	2.3e-06	7.9e+04	2.1e-06
Os-191	1.3e+03	3.6e-08	1.9e+02	5.2e-09	1.5e+02	4.2e-09
Os-191m	1.3e+04	3.4e-07	1.8e+03	4.7e-08	1.5e+03	4.0e-08
Os-193	1.6e+03	4.4e-08	5.5e+02	1.5e-08	4.9e+02	1.3e-08
Os-194	3.6e+01	9.6e-10	7.9e+00	2.1e-10	1.0e+00	2.8e-11
Os-196	4.1e+03	1.1e-07	2.9e+03	7.9e-08	2.9e+03	7.9e-08
Iridium						
Ir-182	1.0e+04	2.7e-07	7.8e+03	2.1e-07	7.6e+03	2.1e-07
Ir-183	9.9e+03	2.7e-07	6.1e+03	1.6e-07	5.8e+03	1.6e-07
Ir-184	3.2e+03	8.5e-08	1.9e+03	5.1e-08	1.8e+03	5.0e-08

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Ir-185	2.4e+03	6.4e-08	1.1e+03	2.9e-08	9.7e+02	2.6e-08
Ir-186	1.2e+03	3.3e-08	7.1e+02	1.9e-08	6.7e+02	1.8e-08
Ir-186m	7.7e+03	2.1e-07	4.9e+03	1.3e-07	4.7e+03	1.3e-07
Ir-187	7.4e+03	2.0e-07	3.2e+03	8.7e-08	3.0e+03	8.1e-08
Ir-188	6.7e+02	1.8e-08	4.5e+02	1.2e-08	4.3e+02	1.1e-08
Ir-189	1.8e+03	5.0e-08	5.5e+02	1.5e-08	4.5e+02	1.2e-08
Ir-190	2.4e+02	6.5e-09	1.5e+02	4.0e-09	1.3e+02	3.5e-09
Ir-190m	5.8e+04	1.6e-06	3.6e+04	9.7e-07	3.1e+04	8.4e-07
Ir-190n	5.1e+03	1.4e-07	3.0e+03	8.2e-08	2.9e+03	7.9e-08
Ir-192	8.6e+01	2.3e-09	4.2e+01	1.1e-09	2.8e+01	7.7e-10
Ir-192n	1.3e+01	3.5e-10	1.2e+01	3.2e-10	7.7e-01	2.1e-11
Ir-193m	2.5e+03	6.7e-08	3.5e+02	9.5e-09	2.8e+02	7.7e-09
Ir-194	9.4e+02	2.5e-08	4.5e+02	1.2e-08	4.1e+02	1.1e-08
Ir-194m	2.6e+01	7.0e-10	1.7e+01	4.7e-10	1.0e+01	2.7e-10
Ir-195	5.9e+03	1.6e-07	3.0e+03	8.1e-08	2.9e+03	7.9e-08
Ir-195m	4.8e+03	1.3e-07	2.1e+03	5.7e-08	2.0e+03	5.4e-08
Ir-196m	4.0e+03	1.1e-07	2.5e+03	6.7e-08	2.4e+03	6.6e-08
Platinum						
Pt-184	1.4e+04	3.7e-07	9.1e+03	2.5e-07	8.9e+03	2.4e-07
Pt-186	6.0e+03	1.6e-07	3.6e+03	9.6e-08	3.4e+03	9.3e-08
Pt-187	7.0e+03	1.9e-07	3.4e+03	9.3e-08	3.3e+03	8.9e-08
Pt-188	3.3e+02	9.0e-09	1.3e+02	3.4e-09	1.1e+02	2.9e-09
Pt-189	4.1e+03	1.1e-07	1.6e+03	4.2e-08	1.4e+03	3.9e-08
Pt-190	5.0e-01	1.4e-11	1.1e-01	2.9e-12	9.7e-03	2.6e-13
Pt-191	2.2e+03	5.9e-08	7.4e+02	2.0e-08	6.4e+02	1.7e-08
Pt-193	3.4e+03	9.1e-08	1.2e+03	3.3e-08	7.2e+01	2.0e-09
Pt-193m	2.7e+03	7.3e-08	4.7e+02	1.3e-08	4.0e+02	1.1e-08
Pt-195m	1.8e+03	4.9e-08	3.7e+02	1.0e-08	3.1e+02	8.5e-09
Pt-197	3.1e+03	8.5e-08	7.8e+02	2.1e-08	6.9e+02	1.9e-08
Pt-197m	6.8e+03	1.8e-07	3.0e+03	8.0e-08	2.8e+03	7.6e-08
Pt-199	1.0e+04	2.8e-07	7.0e+03	1.9e-07	6.8e+03	1.8e-07
Pt-200	1.1e+03	2.9e-08	4.3e+02	1.1e-08	3.9e+02	1.1e-08
Pt-202	2.9e+02	7.8e-09	1.2e+02	3.2e-09	1.0e+02	2.8e-09
Gold						
Au-186	1.5e+04	4.1e-07	1.3e+04	3.6e-07	1.3e+04	3.6e-07
Au-190	1.2e+04	3.3e-07	9.6e+03	2.6e-07	9.6e+03	2.6e-07
Au-191	9.4e+03	2.5e-07	5.4e+03	1.4e-07	5.2e+03	1.4e-07
Au-192	3.3e+03	9.0e-08	2.6e+03	6.9e-08	2.5e+03	6.8e-08
Au-193	6.4e+03	1.7e-07	2.9e+03	7.7e-08	2.6e+03	7.1e-08
Au-194	1.2e+03	3.4e-08	8.9e+02	2.4e-08	8.4e+02	2.3e-08
Au-195	8.9e+02	2.4e-08	1.9e+02	5.0e-09	8.9e+01	2.4e-09
Au-196	1.1e+03	3.0e-08	6.2e+02	1.7e-08	5.5e+02	1.5e-08
Au-196m	2.0e+03	5.4e-08	6.4e+02	1.7e-08	5.8e+02	1.6e-08
Au-198	7.9e+02	2.1e-08	3.4e+02	9.2e-09	3.0e+02	8.2e-09
Au-198m	8.4e+02	2.3e-08	2.7e+02	7.4e-09	2.4e+02	6.4e-09
Au-199	2.0e+03	5.4e-08	4.7e+02	1.3e-08	4.0e+02	1.1e-08
Au-200	6.7e+03	1.8e-07	4.7e+03	1.3e-07	4.7e+03	1.3e-07

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Au-200m	7.8e+02	2.1e-08	4.4e+02	1.2e-08	4.2e+02	1.1e-08
Au-201	1.4e+04	3.9e-07	1.1e+04	2.9e-07	1.1e+04	2.9e-07
Mercury						
Hg-190	1.8e+04	5.0e-07	1.7e+04	4.5e-07	1.7e+04	4.5e-07
Hg-191m	6.6e+03	1.8e-07	5.9e+03	1.6e-07	5.8e+03	1.6e-07
Hg-192	2.1e+03	5.7e-08	1.9e+03	5.3e-08	1.9e+03	5.1e-08
Hg-193	3.6e+03	9.7e-08	3.5e+03	9.6e-08	3.5e+03	9.3e-08
Hg-193m	1.0e+03	2.8e-08	9.8e+02	2.6e-08	9.4e+02	2.5e-08
Hg-194	3.2e+01	8.8e-10	2.7e+01	7.2e-10	1.5e+00	4.0e-11
Hg-195	3.1e+03	8.4e-08	2.7e+03	7.2e-08	2.4e+03	6.6e-08
Hg-195m	6.4e+02	1.7e-08	4.8e+02	1.3e-08	4.3e+02	1.2e-08
Hg-197	1.3e+03	3.4e-08	7.4e+02	2.0e-08	6.6e+02	1.8e-08
Hg-197m	8.0e+02	2.2e-08	5.2e+02	1.4e-08	4.8e+02	1.3e-08
Hg-199m	7.4e+03	2.0e-07	6.0e+03	1.6e-07	6.0e+03	1.6e-07
Hg-203	1.3e+02	3.6e-09	1.1e+02	3.0e-09	9.4e+01	2.5e-09
Thallium						
Tl-194	1.2e+04	3.1e-07	8.6e+03	2.3e-07	8.6e+03	2.3e-07
Tl-194m	1.0e+04	2.8e-07	7.6e+03	2.1e-07	7.5e+03	2.0e-07
Tl-195	1.7e+04	4.6e-07	9.0e+03	2.4e-07	8.5e+03	2.3e-07
Tl-196	8.1e+03	2.2e-07	5.2e+03	1.4e-07	5.1e+03	1.4e-07
Tl-197	1.4e+04	3.8e-07	6.0e+03	1.6e-07	5.6e+03	1.5e-07
Tl-198	4.7e+03	1.3e-07	2.7e+03	7.3e-08	2.6e+03	6.9e-08
Tl-198m	5.7e+03	1.5e-07	3.1e+03	8.4e-08	3.0e+03	8.1e-08
Tl-199	1.1e+04	3.0e-07	4.7e+03	1.3e-07	4.4e+03	1.2e-07
Tl-200	1.6e+03	4.3e-08	9.5e+02	2.6e-08	8.8e+02	2.4e-08
Tl-201	3.9e+03	1.0e-07	1.4e+03	3.7e-08	1.2e+03	3.3e-08
Tl-202	6.9e+02	1.9e-08	4.5e+02	1.2e-08	4.0e+02	1.1e-08
Tl-204	3.3e+02	9.0e-09	3.4e+01	9.2e-10	6.1e+00	1.7e-10
Lead						
Pb-194	1.8e+04	4.7e-07	1.5e+04	4.2e-07	1.5e+04	4.1e-07
Pb-195m	8.3e+03	2.2e-07	1.0e+04	2.7e-07	1.0e+04	2.7e-07
Pb-196	8.2e+03	2.2e-07	8.5e+03	2.3e-07	8.4e+03	2.3e-07
Pb-197m	4.2e+03	1.1e-07	4.8e+03	1.3e-07	4.8e+03	1.3e-07
Pb-198	2.8e+03	7.7e-08	3.4e+03	9.2e-08	3.3e+03	9.0e-08
Pb-199	5.8e+03	1.6e-07	8.1e+03	2.2e-07	8.1e+03	2.2e-07
Pb-200	5.4e+02	1.5e-08	6.9e+02	1.9e-08	6.5e+02	1.8e-08
Pb-201	1.7e+03	4.5e-08	2.1e+03	5.8e-08	2.1e+03	5.7e-08
Pb-202	6.7e+00	1.8e-10	9.0e+00	2.4e-10	8.8e-01	2.4e-11
Pb-202m	2.3e+03	6.3e-08	2.4e+03	6.5e-08	2.4e+03	6.4e-08
Pb-203	9.2e+02	2.5e-08	1.2e+03	3.4e-08	1.2e+03	3.2e-08
Pb-204m	9.8e+03	2.6e-07	8.4e+03	2.3e-07	8.4e+03	2.3e-07
Pb-205	8.1e+02	2.2e-08	9.8e+02	2.6e-08	6.1e+01	1.6e-09
Pb-209	2.9e+03	7.8e-08	3.7e+03	1.0e-07	3.7e+03	1.0e-07
Pb-210	2.1e-01	5.6e-12	1.3e-01	3.5e-12	8.8e-03	2.4e-13
Pb-211	8.2e+00	2.2e-10	1.1e+01	3.0e-10	1.1e+01	3.0e-10
Pb-212	7.4e-01	2.0e-11	1.2e+00	3.1e-11	1.1e+00	3.0e-11
Pb-214	1.0e+01	2.7e-10	1.2e+01	3.1e-10	1.2e+01	3.1e-10

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Bismuth						
Bi-200	7.0e+03	1.9e-07	6.5e+03	1.8e-07	6.4e+03	1.7e-07
Bi-201	3.5e+03	9.4e-08	3.3e+03	8.8e-08	3.2e+03	8.6e-08
Bi-202	4.0e+03	1.1e-07	4.0e+03	1.1e-07	3.9e+03	1.1e-07
Bi-203	9.4e+02	2.6e-08	8.3e+02	2.2e-08	8.1e+02	2.2e-08
Bi-204	7.9e+02	2.1e-08	7.3e+02	2.0e-08	7.1e+02	1.9e-08
Bi-205	3.6e+02	9.6e-09	1.5e+02	4.1e-09	1.3e+02	3.4e-09
Bi-206	2.0e+02	5.4e-09	1.1e+02	3.1e-09	1.0e+02	2.7e-09
Bi-207	1.6e+02	4.3e-09	2.0e+01	5.3e-10	1.1e+00	3.0e-11
Bi-208	1.4e+02	3.7e-09	2.2e+01	5.9e-10	8.9e-01	2.4e-11
Bi-210	2.1e+01	5.6e-10	2.6e+00	7.1e-11	1.4e+00	3.9e-11
Bi-210m	6.6e-01	1.8e-11	5.7e-02	1.5e-12	5.7e-03	1.5e-13
Bi-212	5.6e+00	1.5e-10	5.4e+00	1.5e-10	5.4e+00	1.5e-10
Bi-213	6.0e+00	1.6e-10	5.8e+00	1.6e-10	5.8e+00	1.6e-10
Bi-214	1.3e+01	3.4e-10	1.3e+01	3.4e-10	1.2e+01	3.4e-10
Polonium						
Po-203	5.0e+03	1.4e-07	4.6e+03	1.2e-07	4.5e+03	1.2e-07
Po-204	5.2e+02	1.4e-08	4.0e+02	1.1e-08	3.8e+02	1.0e-08
Po-205	5.7e+03	1.5e-07	4.8e+03	1.3e-07	4.6e+03	1.2e-07
Po-206	1.2e+01	3.3e-10	4.0e+00	1.1e-10	3.4e+00	9.2e-11
Po-207	3.1e+03	8.3e-08	2.5e+03	6.9e-08	2.3e+03	6.3e-08
Po-208	1.0e-01	2.7e-12	5.0e-02	1.3e-12	1.7e-02	4.7e-13
Po-209	9.8e-02	2.7e-12	4.8e-02	1.3e-12	6.4e-03	1.7e-13
Po-210	1.4e-01	3.8e-12	6.9e-02	1.9e-12	4.5e-02	1.2e-12
Astatine						
At-205	3.0e+02	8.1e-09	1.9e+02	5.1e-09	1.9e+02	5.1e-09
At-206	1.7e+03	4.6e-08	8.4e+02	2.3e-08	7.7e+02	2.1e-08
At-207	1.5e+02	4.1e-09	6.8e+01	1.9e-09	6.7e+01	1.8e-09
At-208	7.0e+02	1.9e-08	4.1e+02	1.1e-08	2.1e+02	5.6e-09
At-209	1.0e+02	2.8e-09	5.8e+01	1.6e-09	5.3e+01	1.4e-09
At-210	3.3e+01	9.0e-10	2.6e+01	7.1e-10	1.8e+01	4.9e-10
At-211	2.4e+00	6.4e-11	1.5e+00	4.1e-11	1.5e+00	4.0e-11
Francium						
Fr-212	5.1e+01	1.4e-09	3.4e+01	9.3e-10	3.4e+01	9.1e-10
Fr-222	9.1e+00	2.5e-10	6.7e+00	1.8e-10	6.7e+00	1.8e-10
Fr-223	7.0e+02	1.9e-08	3.5e+01	9.6e-10	2.8e+01	7.6e-10
Radium						
Ra-223	7.0e-01	1.9e-11	4.7e-02	1.3e-12	3.7e-02	1.0e-12
Ra-224	1.1e+00	2.9e-11	9.1e-02	2.5e-12	7.5e-02	2.0e-12
Ra-225	1.5e+00	4.2e-11	8.1e-02	2.2e-12	5.9e-02	1.6e-12
Ra-226	6.9e-01	1.9e-11	5.8e-02	1.6e-12	5.9e-03	1.6e-13
Ra-227	5.9e+02	1.6e-08	7.4e+02	2.0e-08	3.1e+02	8.5e-09
Ra-228	2.1e-01	5.6e-12	6.3e-02	1.7e-12	3.6e-03	9.8e-14
Ra-230	2.1e+03	5.7e-08	1.6e+03	4.3e-08	1.6e+03	4.2e-08
Actinium						
Ac-224	3.6e+00	9.8e-11	2.3e+00	6.1e-11	2.0e+00	5.5e-11
Ac-225	9.6e-02	2.6e-12	4.5e-02	1.2e-12	3.9e-02	1.1e-12

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Ac-226	2.3e-01	6.3e-12	1.7e-01	4.6e-12	1.6e-01	4.3e-12
Ac-227	2.4e-03	6.5e-14	3.1e-03	8.3e-14	1.2e-03	3.3e-14
Ac-228	3.2e+01	8.6e-10	2.1e+01	5.7e-10	1.0e+01	2.7e-10
Thorium						
Th-226	5.8e+00	1.6e-10	2.8e+00	7.6e-11	2.8e+00	7.5e-11
Th-227	3.1e-01	8.4e-12	5.1e-02	1.4e-12	3.7e-02	1.0e-12
Th-228	7.8e-03	2.1e-13	8.1e-03	2.2e-13	3.7e-03	1.0e-13
Th-229	1.3e-03	3.6e-14	2.7e-03	7.2e-14	8.2e-04	2.2e-14
Th-230	4.8e-03	1.3e-13	1.0e-02	2.7e-13	5.4e-03	1.5e-13
Th-231	3.6e+03	9.7e-08	8.4e+02	2.3e-08	7.2e+02	1.9e-08
Th-232	4.1e-03	1.1e-13	8.8e-03	2.4e-13	1.4e-03	3.7e-14
Th-233	1.7e+04	4.7e-07	1.1e+04	3.1e-07	1.1e+04	3.0e-07
Th-234	7.2e+01	1.9e-09	3.4e+01	9.1e-10	2.6e+01	7.1e-10
Th-236	5.3e+03	1.4e-07	3.1e+03	8.5e-08	3.1e+03	8.4e-08
Protactinium						
Pa-227	5.3e+00	1.4e-10	2.2e+00	6.0e-11	2.2e+00	5.8e-11
Pa-228	5.6e+00	1.5e-10	4.3e+00	1.2e-10	2.3e+00	6.3e-11
Pa-229	2.5e+02	6.8e-09	5.1e+01	1.4e-09	4.1e+01	1.1e-09
Pa-230	4.4e+00	1.2e-10	8.6e-01	2.3e-11	5.8e-01	1.6e-11
Pa-231	1.6e-03	4.4e-14	3.7e-03	1.0e-13	1.6e-03	4.4e-14
Pa-232	3.5e+02	9.5e-09	2.4e+02	6.5e-09	2.1e+01	5.6e-10
Pa-233	1.9e+02	5.3e-09	9.8e+01	2.7e-09	7.7e+01	2.1e-09
Pa-234	1.9e+03	5.0e-08	7.9e+02	2.1e-08	7.5e+02	2.0e-08
Pa-235	1.6e+04	4.4e-07	1.1e+04	2.9e-07	1.1e+04	2.9e-07
Uranium						
U-230	5.0e-01	1.4e-11	2.9e-02	7.7e-13	2.2e-02	5.9e-13
U-231	3.4e+03	9.1e-08	5.5e+02	1.5e-08	4.3e+02	1.2e-08
U-232	8.2e-02	2.2e-12	2.6e-02	6.9e-13	1.1e-03	3.0e-14
U-233	4.3e-01	1.2e-11	5.6e-02	1.5e-12	5.8e-03	1.6e-13
U-234	4.4e-01	1.2e-11	5.7e-02	1.5e-12	6.0e-03	1.6e-13
U-235	4.8e-01	1.3e-11	6.2e-02	1.7e-12	6.5e-03	1.8e-13
U-235m	1.0e+09	2.8e-02	1.0e+09	2.7e-02	1.0e+09	2.7e-02
U-236	4.7e-01	1.3e-11	6.1e-02	1.6e-12	6.4e-03	1.7e-13
U-237	1.6e+03	4.2e-08	2.2e+02	6.0e-09	1.8e+02	4.9e-09
U-238	5.0e-01	1.3e-11	6.5e-02	1.8e-12	6.8e-03	1.8e-13
U-239	1.2e+04	3.3e-07	9.4e+03	2.5e-07	9.1e+03	2.5e-07
U-240	9.8e+02	2.6e-08	4.6e+02	1.2e-08	4.1e+02	1.1e-08
U-242	6.9e+03	1.9e-07	6.3e+03	1.7e-07	6.3e+03	1.7e-07
Neptunium						
Np-232	3.3e+04	8.8e-07	2.3e+04	6.1e-07	2.6e+03	7.0e-08
Np-233	2.2e+05	5.8e-06	1.6e+05	4.2e-06	1.5e+05	4.2e-06
Np-234	6.9e+02	1.9e-08	4.3e+02	1.2e-08	3.9e+02	1.1e-08
Np-235	4.1e+02	1.1e-08	4.3e+02	1.2e-08	2.3e+02	6.2e-09
Np-236	6.2e-02	1.7e-12	1.2e-01	3.4e-12	2.7e-02	7.4e-13
Np-236m	4.0e+01	1.1e-09	4.8e+01	1.3e-09	2.4e+01	6.6e-10
Np-237	1.1e-02	3.0e-13	1.7e-02	4.6e-13	5.5e-03	1.5e-13
Np-238	5.9e+01	1.6e-09	7.9e+01	2.1e-09	6.0e+01	1.6e-09

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Np-239	1.3e+03	3.4e-08	3.3e+02	9.0e-09	2.9e+02	7.8e-09
Np-240	4.8e+03	1.3e-07	3.0e+03	8.0e-08	2.9e+03	7.9e-08
Np-241	1.8e+04	5.0e-07	1.6e+04	4.4e-07	1.5e+04	4.2e-07
Plutonium						
Pu-232	7.2e+00	1.9e-10	7.1e+00	1.9e-10	7.1e+00	1.9e-10
Pu-234	2.6e+01	7.0e-10	2.1e+01	5.7e-10	2.0e+01	5.4e-10
Pu-235	1.9e+05	5.1e-06	1.9e+05	5.1e-06	1.8e+05	5.0e-06
Pu-236	1.9e-02	5.1e-13	2.0e-02	5.4e-13	1.1e-02	2.8e-13
Pu-237	8.5e+02	2.3e-08	5.5e+02	1.5e-08	4.5e+02	1.2e-08
Pu-238	4.4e-03	1.2e-13	5.9e-03	1.6e-13	4.7e-03	1.3e-13
Pu-239	4.0e-03	1.1e-13	5.4e-03	1.5e-13	4.4e-03	1.2e-13
Pu-240	4.0e-03	1.1e-13	5.4e-03	1.5e-13	4.4e-03	1.2e-13
Pu-241	3.7e-01	9.9e-12	5.9e-01	1.6e-11	3.3e-01	8.9e-12
Pu-242	4.2e-03	1.1e-13	5.7e-03	1.5e-13	4.7e-03	1.3e-13
Pu-243	3.0e+03	8.0e-08	2.9e+03	7.7e-08	2.8e+03	7.5e-08
Pu-244	4.2e-03	1.1e-13	5.8e-03	1.6e-13	4.7e-03	1.3e-13
Pu-245	6.7e+02	1.8e-08	6.2e+02	1.7e-08	6.0e+02	1.6e-08
Pu-246	9.7e+01	2.6e-09	5.8e+01	1.6e-09	4.9e+01	1.3e-09
Americium						
Am-237	8.4e+03	2.3e-07	8.3e+03	2.2e-07	8.2e+03	2.2e-07
Am-238	1.8e+03	4.8e-08	2.3e+03	6.2e-08	1.9e+03	5.1e-08
Am-239	1.3e+03	3.4e-08	1.1e+03	3.1e-08	1.1e+03	3.0e-08
Am-240	5.7e+02	1.5e-08	4.9e+02	1.3e-08	4.7e+02	1.3e-08
Am-241	6.9e-03	1.9e-13	9.2e-03	2.5e-13	4.6e-03	1.3e-13
Am-242	3.1e+01	8.4e-10	1.6e+01	4.4e-10	1.1e+01	2.9e-10
Am-242m	7.1e-03	1.9e-13	1.0e-02	2.8e-13	5.3e-03	1.4e-13
Am-243	6.9e-03	1.9e-13	9.3e-03	2.5e-13	4.7e-03	1.3e-13
Am-244	1.4e+02	3.8e-09	1.6e+02	4.2e-09	9.1e+01	2.5e-09
Am-244m	2.8e+03	7.7e-08	3.2e+03	8.6e-08	2.0e+03	5.3e-08
Am-245	3.8e+03	1.0e-07	3.7e+03	1.0e-07	3.6e+03	9.8e-08
Am-246	2.9e+03	7.7e-08	2.8e+03	7.7e-08	2.8e+03	7.7e-08
Am-246m	8.6e+03	2.3e-07	8.6e+03	2.3e-07	8.5e+03	2.3e-07
Am-247	7.4e+03	2.0e-07	7.4e+03	2.0e-07	7.4e+03	2.0e-07
Curium						
Cm-238	9.0e+01	2.4e-09	8.8e+01	2.4e-09	8.6e+01	2.3e-09
Cm-239	4.7e+03	1.3e-07	4.2e+03	1.1e-07	4.0e+03	1.1e-07
Cm-240	2.1e-01	5.8e-12	1.1e-01	2.9e-12	8.1e-02	2.2e-12
Cm-241	1.4e+01	3.9e-10	8.6e+00	2.3e-10	6.2e+00	1.7e-10
Cm-242	9.8e-02	2.7e-12	5.3e-02	1.4e-12	3.5e-02	9.6e-13
Cm-243	9.2e-03	2.5e-13	1.1e-02	3.1e-13	5.8e-03	1.6e-13
Cm-244	1.1e-02	2.9e-13	1.3e-02	3.5e-13	6.7e-03	1.8e-13
Cm-245	6.7e-03	1.8e-13	9.1e-03	2.5e-13	4.6e-03	1.2e-13
Cm-246	6.8e-03	1.8e-13	9.1e-03	2.5e-13	4.6e-03	1.2e-13
Cm-247	7.3e-03	2.0e-13	9.9e-03	2.7e-13	5.1e-03	1.4e-13
Cm-248	1.7e-03	4.7e-14	2.6e-03	7.0e-14	1.4e-03	3.8e-14
Cm-249	5.2e+03	1.4e-07	5.6e+03	1.5e-07	4.6e+03	1.2e-07
Cm-250	2.5e-04	6.9e-15	3.9e-04	1.0e-14	2.1e-04	5.8e-15

Table 7: Derived concentration standards for members of the public for inhalation of particles (cont'd)

Nuclide	Type F		Type M		Type S	
	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)	(Bq/m ³)	(μ Ci/mL)
Cm-251	8.0e+03	2.2e-07	8.0e+03	2.2e-07	7.7e+03	2.1e-07
Berkelium						
Bk-245	2.3e+02	6.3e-09	1.4e+02	3.7e-09	1.2e+02	3.2e-09
Bk-246	8.2e+02	2.2e-08	7.5e+02	2.0e-08	6.7e+02	1.8e-08
Bk-247	7.3e-03	2.0e-13	9.8e-03	2.6e-13	4.5e-03	1.2e-13
Bk-248m	2.9e+01	7.9e-10	1.9e+01	5.2e-10	1.1e+01	2.9e-10
Bk-249	3.3e+00	8.9e-11	5.0e+00	1.3e-10	2.0e+00	5.5e-11
Bk-250	4.2e+02	1.1e-08	4.5e+02	1.2e-08	2.3e+02	6.3e-09
Bk-251	4.9e+03	1.3e-07	4.9e+03	1.3e-07	4.6e+03	1.2e-07
Californium						
Cf-244	1.4e+01	3.9e-10	1.4e+01	3.7e-10	1.3e+01	3.6e-10
Cf-246	6.6e-01	1.8e-11	4.6e-01	1.2e-11	4.1e-01	1.1e-11
Cf-247	5.6e+03	1.5e-07	5.7e+03	1.5e-07	4.8e+03	1.3e-07
Cf-248	5.9e-02	1.6e-12	3.8e-02	1.0e-12	2.1e-02	5.8e-13
Cf-249	7.6e-03	2.0e-13	1.0e-02	2.7e-13	4.4e-03	1.2e-13
Cf-250	1.4e-02	3.8e-13	1.6e-02	4.2e-13	7.3e-03	2.0e-13
Cf-251	7.5e-03	2.0e-13	1.0e-02	2.7e-13	4.4e-03	1.2e-13
Cf-252	2.0e-02	5.3e-13	1.7e-02	4.6e-13	9.3e-03	2.5e-13
Cf-253	1.1e+00	3.0e-11	3.3e-01	9.0e-12	2.4e-01	6.5e-12
Cf-254	1.0e-02	2.7e-13	5.1e-03	1.4e-13	3.9e-03	1.1e-13
Cf-255	2.1e+02	5.8e-09	7.2e+01	1.9e-09	5.5e+01	1.5e-09
Einsteinium						
Es-249	7.2e+02	1.9e-08	7.1e+02	1.9e-08	6.8e+02	1.8e-08
Es-250	1.6e+02	4.2e-09	1.7e+02	4.5e-09	8.7e+01	2.4e-09
Es-250m	7.0e+02	1.9e-08	7.7e+02	2.1e-08	3.7e+02	9.9e-09
Es-251	1.3e+02	3.6e-09	9.9e+01	2.7e-09	8.9e+01	2.4e-09
Es-253	3.2e-01	8.8e-12	1.3e-01	3.6e-12	1.1e-01	3.0e-12
Es-254	6.5e-02	1.8e-12	4.0e-02	1.1e-12	2.3e-02	6.1e-13
Es-254m	7.5e-01	2.0e-11	4.9e-01	1.3e-11	4.4e-01	1.2e-11
Es-255	3.2e-01	8.7e-12	1.1e-01	2.9e-12	8.2e-02	2.2e-12
Es-256	2.9e+00	7.8e-11	2.7e+00	7.4e-11	2.7e+00	7.3e-11
Fermium						
Fm-251	1.0e+02	2.7e-09	9.0e+01	2.4e-09	8.7e+01	2.4e-09
Fm-252	7.5e-01	2.0e-11	5.7e-01	1.5e-11	5.2e-01	1.4e-11
Fm-253	2.4e+00	6.5e-11	9.5e-01	2.6e-11	7.8e-01	2.1e-11
Fm-254	2.6e+00	6.9e-11	2.5e+00	6.6e-11	2.4e+00	6.6e-11
Fm-255	8.7e-01	2.4e-11	7.0e-01	1.9e-11	6.7e-01	1.8e-11
Fm-256	4.6e-01	1.2e-11	4.4e-01	1.2e-11	4.3e-01	1.2e-11
Fm-257	9.5e-02	2.6e-12	4.2e-02	1.1e-12	2.7e-02	7.2e-13

Table 8. Derived concentration standards for members of the public for inhalation of gas or vapor

Nuclide	Derived Concentration Standard	
	(Bq/m³)	(μCi/mL)
Tritiated water vapor		
H-3 (inhalation + skin absorption) ^(a)	4.6e+03	1.3e-07
Elemental tritium		
H-3	6.9e+07	1.9e-03
Hydrogen (other forms)		
H-3	6.9e+03	1.9e-07
Carbon monoxide		
C-11	5.4e+04	1.5e-06
C-14	6.8e+04	1.8e-06
Carbon dioxide		
C-11	3.6e+04	9.7e-07
C-14	1.1e+04	2.9e-07
Carbon (other forms)		
C-11	5.3e+03	1.4e-07
C-14	8.4e+02	2.3e-08
Inorganic sulfur		
S-35	2.5e+03	6.8e-08
S-38	4.2e+02	1.1e-08
Organic sulfur		
S-35	1.1e+02	2.9e-09
S-38	4.1e+02	1.1e-08
Nickel gas or vapor		
Ni-56	1.1e+02	3.1e-09
Ni-57	8.7e+01	2.4e-09
Ni-59	3.5e+02	9.3e-09
Ni-63	4.0e+01	1.1e-09
Ni-65	3.4e+02	9.1e-09
Ni-66	2.7e+01	7.3e-10
Ruthenium tetroxide		
Ru-94	1.5e+03	3.9e-08
Ru-95	2.3e+03	6.3e-08
Ru-97	1.2e+03	3.2e-08
Ru-103	9.7e+01	2.6e-09
Ru-105	3.6e+02	9.8e-09
Ru-106	1.9e+01	5.2e-10
Tellurium gas or vapor		
Te-114	2.8e+03	7.4e-08
Te-116	1.2e+03	3.1e-08
Te-117	3.7e+03	9.9e-08
Te-118	8.4e+01	2.3e-09
Te-119	1.4e+03	3.7e-08
Te-119m	2.3e+02	6.2e-09
Te-121	2.8e+02	7.5e-09
Te-121m	1.2e+02	3.2e-09
Te-123	7.3e+03	2.0e-07
Te-123m	1.8e+02	4.9e-09
Te-125m	2.3e+02	6.2e-09
Te-127	1.5e+03	4.1e-08
Te-127m	9.2e+01	2.5e-09

Table 8. Derived concentration standards for members of the public for inhalation of gas or vapor (cont'd)

Nuclide	Derived Concentration Standard	
	(Bq/m³)	(μCi/mL)
Te-129	2.3e+03	6.2e-08
Te-129m	6.1e+01	1.6e-09
Te-131	1.6e+03	4.2e-08
Te-131m	6.9e+01	1.9e-09
Te-132	3.5e+01	9.6e-10
Te-133	2.1e+03	5.6e-08
Te-133m	5.8e+02	1.6e-08
Te-134	1.1e+03	3.1e-08
Methyl iodide		
I-118	5.5e+03	1.5e-07
I-119	1.1e+04	3.0e-07
I-120	8.5e+02	2.3e-08
I-120m	1.6e+03	4.4e-08
I-121	4.0e+03	1.1e-07
I-123	8.8e+02	2.4e-08
I-124	2.0e+01	5.3e-10
I-125	1.5e+01	4.0e-10
I-126	8.1e+00	2.2e-10
I-128	7.3e+03	2.0e-07
I-129	2.1e+00	5.8e-11
I-130	1.1e+02	3.0e-09
I-131	1.0e+01	2.8e-10
I-132	6.7e+02	1.8e-08
I-132m	8.2e+02	2.2e-08
I-133	5.1e+01	1.4e-09
I-134	2.3e+03	6.1e-08
I-135	2.2e+02	5.8e-09
Iodine (other forms)		
I-118	2.6e+03	6.9e-08
I-119	2.7e+03	7.2e-08
I-120	4.7e+02	1.3e-08
I-120m	7.7e+02	2.1e-08
I-121	2.2e+03	5.9e-08
I-123	5.9e+02	1.6e-08
I-124	1.4e+01	3.8e-10
I-125	1.0e+01	2.8e-10
I-126	5.7e+00	1.5e-10
I-128	1.7e+03	4.5e-08
I-129	1.5e+00	4.0e-11
I-130	7.5e+01	2.0e-09
I-131	7.2e+00	1.9e-10
I-132	3.8e+02	1.0e-08
I-132m	4.7e+02	1.3e-08
I-133	3.5e+01	9.6e-10
I-134	8.5e+02	2.3e-08
I-135	1.4e+02	3.8e-09

Table 8. Derived concentration standards for members of the public for inhalation of gas or vapor (cont'd)

Nuclide	Derived Concentration Standard	
	(Bq/m ³)	(μ Ci/mL)
Mercury gas or vapor		
Hg-190	1.5e+04	4.0e-07
Hg-191m	5.4e+03	1.5e-07
Hg-192	1.5e+03	4.0e-08
Hg-193	2.7e+03	7.2e-08
Hg-193m	7.1e+02	1.9e-08
Hg-194	1.4e+01	3.7e-10
Hg-195	2.3e+03	6.1e-08
Hg-195m	3.9e+02	1.1e-08
Hg-197	7.3e+02	2.0e-08
Hg-197m	5.5e+02	1.5e-08
Hg-199m	1.1e+04	2.9e-07
Hg-203	7.0e+01	1.9e-09

^(a) Dose from skin absorption assumed to be 50% of dose from inhalation based on paragraph 22 of ICRP Publication 134 (2016)

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Hydrogen				
H-3	12.32	y	8.1e+08	2.2e-02
Beryllium				
Be-7	53.22	d	1.4e+04	3.8e-07
Be-10	1.51e+6	y	5.6e+04	1.5e-06
Carbon				
C-10	19.255	s	3.8e+02	1.0e-08
C-11	20.39	m	6.7e+02	1.8e-08
C-14	5.70e+3	y	8.0e+05	2.2e-05
Nitrogen				
N-13	9.965	m	6.6e+02	1.8e-08
N-16	7.13	s	1.1e+02	3.0e-09
Oxygen				
O-14	70.606	s	1.9e+02	5.1e-09
O-15	122.24	s	6.5e+02	1.8e-08
O-19	26.464	s	6.0e+02	1.6e-08
Fluorine				
F-17	64.49	s	6.5e+02	1.8e-08
F-18	109.77	m	7.0e+02	1.9e-08
Neon				
Ne-19	17.22	s	6.4e+02	1.7e-08
Ne-24	3.38	m	1.2e+03	3.1e-08
Sodium				
Na-22	2.6019	y	3.0e+02	8.2e-09
Na-24	14.9590	h	1.5e+02	4.0e-09
Magnesium				
Mg-27	9.458	m	7.2e+02	1.9e-08
Mg-28	20.915	h	4.8e+02	1.3e-08
Aluminum				
Al-26	7.17e+5	y	2.4e+02	6.5e-09
Al-28	2.2414	m	3.4e+02	9.1e-09
Al-29	6.56	m	4.5e+02	1.2e-08
Silicon				
Si-31	157.3	m	1.7e+04	4.6e-07
Si-32	132	y	4.1e+05	1.1e-05
Phosphorus				
P-30	2.498	m	6.1e+02	1.6e-08
P-32	14.263	d	1.4e+04	3.9e-07
P-33	25.34	d	3.4e+05	9.2e-06
Sulfur				
S-35	87.51	d	7.8e+05	2.1e-05
S-37	5.05	m	2.0e+02	5.4e-09
S-38	170.3	m	3.6e+02	9.8e-09
Chlorine				
Cl-34	1.5264	s	5.7e+02	1.5e-08
Cl-34m	32.00	m	3.0e+02	8.0e-09

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Cl-36	3.01e+5	y	4.8e+04	1.3e-06
Cl-38	37.24	m	3.9e+02	1.1e-08
Cl-39	55.6	m	4.3e+02	1.2e-08
Cl-40	1.35	m	1.5e+02	3.9e-09
Argon				
Ar-39	269	y	6.6e+04	1.8e-06
Ar-41	109.61	m	5.0e+02	1.3e-08
Ar-42	32.9	y	6.1e+04	1.6e-06
Ar-43	5.37	m	3.9e+02	1.1e-08
Ar-44	11.87	m	3.2e+02	8.8e-09
Potassium				
K-38	7.636	m	2.0e+02	5.3e-09
K-40	1.251e+9	y	3.4e+03	9.2e-08
K-42	12.360	h	1.6e+03	4.4e-08
K-43	22.3	h	7.1e+02	1.9e-08
K-44	22.13	m	2.5e+02	6.8e-09
K-45	17.3	m	3.3e+02	9.0e-09
K-46	105	s	2.0e+02	5.4e-09
Calcium				
Ca-45	162.67	d	3.3e+05	9.0e-06
Ca-47	4.536	d	6.1e+02	1.6e-08
Ca-49	8.718	m	1.8e+02	5.0e-09
Scandium				
Sc-42m	62.0	s	1.5e+02	4.2e-09
Sc-43	3.891	h	6.9e+02	1.9e-08
Sc-44	3.97	h	3.1e+02	8.4e-09
Sc-44m	58.61	h	2.6e+03	7.0e-08
Sc-46	83.79	d	3.3e+02	8.9e-09
Sc-47	3.3492	d	6.3e+03	1.7e-07
Sc-48	43.67	h	2.0e+02	5.3e-09
Sc-49	57.2	m	1.1e+04	3.1e-07
Sc-50	102.5	s	2.0e+02	5.3e-09
Titanium				
Ti-44	60.0	y	7.8e+03	2.1e-07
Ti-45	184.8	m	7.8e+02	2.1e-08
Ti-51	5.76	m	1.6e+03	4.4e-08
Ti-52	1.7	m	4.1e+03	1.1e-07
Vanadium				
V-47	32.6	m	6.6e+02	1.8e-08
V-48	15.9735	d	2.3e+02	6.1e-09
V-50	1.50e+17	y	4.5e+02	1.2e-08
V-52	3.743	m	4.2e+02	1.1e-08
V-53	1.61	m	6.0e+02	1.6e-08
Chromium				
Cr-48	21.56	h	1.7e+03	4.5e-08
Cr-49	42.3	m	6.5e+02	1.7e-08
Cr-51	27.7025	d	2.2e+04	6.1e-07
Cr-55	3.497	m	7.8e+03	2.1e-07

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Cr-56	5.94	m	7.1e+03	1.9e-07
Manganese				
Mn-50m	1.75	m	1.4e+02	3.8e-09
Mn-51	46.2	m	6.5e+02	1.8e-08
Mn-52	5.591	d	1.9e+02	5.2e-09
Mn-52m	21.1	m	2.7e+02	7.2e-09
Mn-54	312.12	d	8.1e+02	2.2e-08
Mn-56	2.5789	h	3.7e+02	1.0e-08
Mn-57	85.4	s	3.8e+03	1.0e-07
Mn-58m	65.2	s	2.6e+02	7.0e-09
Iron				
Fe-52	8.275	h	9.4e+02	2.5e-08
Fe-53	8.51	m	5.5e+02	1.5e-08
Fe-53m	2.526	m	2.2e+02	5.8e-09
Fe-55	2.737	y	4.7e+12	1.3e+02
Fe-59	44.495	d	5.5e+02	1.5e-08
Fe-60	1.5e+6	y	4.9e+05	1.3e-05
Fe-61	5.98	m	4.5e+02	1.2e-08
Fe-62	68	s	1.2e+03	3.3e-08
Cobalt				
Co-54m	1.48	m	1.6e+02	4.4e-09
Co-55	17.53	h	3.3e+02	9.0e-09
Co-56	77.23	d	1.8e+02	4.8e-09
Co-57	271.74	d	6.3e+03	1.7e-07
Co-58	70.86	d	7.0e+02	1.9e-08
Co-58m	9.04	h	6.4e+08	1.7e-02
Co-60	5.2713	y	2.6e+02	7.0e-09
Co-60m	10.467	m	1.6e+05	4.4e-06
Co-61	1.650	h	6.7e+03	1.8e-07
Co-62	1.50	m	3.7e+02	1.0e-08
Co-62m	13.91	m	2.3e+02	6.3e-09
Nickel				
Ni-56	6.075	d	4.0e+02	1.1e-08
Ni-57	35.60	h	3.4e+02	9.1e-09
Ni-59	1.01e+5	y	4.5e+07	1.2e-03
Ni-63	100.1	y	6.6e+06	1.8e-04
Ni-65	2.51719	h	1.1e+03	2.9e-08
Ni-66	54.6	h	3.6e+05	9.7e-06
Copper				
Cu-57	0.1963	s	4.1e+02	1.1e-08
Cu-59	81.5	s	4.4e+02	1.2e-08
Cu-60	23.7	m	1.6e+02	4.4e-09
Cu-61	3.333	h	8.3e+02	2.2e-08
Cu-62	9.673	m	6.2e+02	1.7e-08
Cu-64	12.700	h	3.7e+03	9.9e-08
Cu-66	5.120	m	3.7e+03	1.0e-07
Cu-67	61.83	h	6.2e+03	1.7e-07
Cu-69	2.85	m	1.1e+03	3.0e-08

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μCi/mL)
Zinc				
Zn-60	2.38	m	4.3e+02	1.2e-08
Zn-61	89.1	s	4.0e+02	1.1e-08
Zn-62	9.186	h	1.6e+03	4.3e-08
Zn-63	38.47	m	5.9e+02	1.6e-08
Zn-65	244.06	d	1.1e+03	3.1e-08
Zn-69	56.4	m	3.9e+04	1.1e-06
Zn-69m	13.76	h	1.7e+03	4.6e-08
Zn-71	2.45	m	1.7e+03	4.7e-08
Zn-71m	3.96	h	4.3e+02	1.2e-08
Zn-72	46.5	h	5.0e+03	1.4e-07
Gallium				
Ga-64	2.627	m	1.8e+02	4.9e-09
Ga-65	15.2	m	5.7e+02	1.5e-08
Ga-66	9.49	h	2.4e+02	6.6e-09
Ga-67	3.2612	d	4.8e+03	1.3e-07
Ga-68	67.71	m	6.9e+02	1.9e-08
Ga-70	21.14	m	1.3e+04	3.6e-07
Ga-72	14.10	h	2.4e+02	6.4e-09
Ga-73	4.86	h	1.9e+03	5.1e-08
Ga-74	8.12	m	2.0e+02	5.3e-09
Germanium				
Ge-66	2.26	h	1.0e+03	2.8e-08
Ge-67	18.9	m	4.5e+02	1.2e-08
Ge-68	270.95	d	2.5e+08	6.8e-03
Ge-69	39.05	h	7.0e+02	1.9e-08
Ge-71	11.43	d	2.5e+08	6.7e-03
Ge-75	82.78	m	1.2e+04	3.2e-07
Ge-77	11.30	h	6.1e+02	1.6e-08
Ge-78	88	m	2.5e+03	6.7e-08
Arsenic				
As-68	151.6	s	1.7e+02	4.6e-09
As-69	15.23	m	5.6e+02	1.5e-08
As-70	52.6	m	1.5e+02	4.2e-09
As-71	65.28	h	1.2e+03	3.3e-08
As-72	26.0	h	3.7e+02	9.9e-09
As-73	80.30	d	2.5e+05	6.6e-06
As-74	17.77	d	9.0e+02	2.4e-08
As-76	1.0778	d	1.4e+03	3.7e-08
As-77	38.83	h	3.6e+04	9.8e-07
As-78	90.7	m	4.7e+02	1.3e-08
As-79	9.01	m	7.0e+03	1.9e-07
Selenium				
Se-70	41.1	m	9.8e+02	2.6e-08
Se-71	4.74	m	4.0e+02	1.1e-08
Se-72	8.40	d	6.1e+04	1.6e-06
Se-73	7.15	h	6.4e+02	1.7e-08
Se-73m	39.8	m	2.6e+03	6.9e-08

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Se-75	119.779	d	1.9e+03	5.1e-08
Se-77m	17.36	s	8.5e+03	2.3e-07
Se-79	2.95e+5	y	7.1e+05	1.9e-05
Se-79m	3.92	m	8.9e+04	2.4e-06
Se-81	18.45	m	1.4e+04	3.8e-07
Se-81m	57.28	m	5.7e+04	1.5e-06
Se-83	22.3	m	2.5e+02	6.8e-09
Se-83m	70.1	s	6.0e+02	1.6e-08
Se-84	3.1	m	1.5e+03	4.2e-08
Bromine				
Br-72	78.6	s	2.0e+02	5.5e-09
Br-73	3.4	m	4.5e+02	1.2e-08
Br-74	25.4	m	1.3e+02	3.6e-09
Br-74m	46	m	1.5e+02	4.1e-09
Br-75	96.7	m	5.7e+02	1.5e-08
Br-76	16.2	h	2.3e+02	6.2e-09
Br-76m	1.31	s	3.6e+04	9.7e-07
Br-77	57.036	h	2.2e+03	6.0e-08
Br-77m	4.28	m	5.3e+04	1.4e-06
Br-78	6.46	m	6.2e+02	1.7e-08
Br-80	17.68	m	5.4e+03	1.5e-07
Br-80m	4.4205	h	1.5e+05	4.2e-06
Br-82	35.30	h	2.5e+02	6.9e-09
Br-82m	6.13	m	1.3e+05	3.4e-06
Br-83	2.40	h	2.8e+04	7.5e-07
Br-84	31.80	m	3.4e+02	9.1e-09
Br-84m	6.0	m	2.3e+02	6.3e-09
Br-85	2.90	m	4.6e+03	1.2e-07
Krypton				
Kr-74	11.50	m	6.5e+02	1.7e-08
Kr-75	4.29	m	4.9e+02	1.3e-08
Kr-76	14.8	h	1.7e+03	4.6e-08
Kr-77	74.4	m	6.5e+02	1.8e-08
Kr-79	35.04	h	2.8e+03	7.6e-08
Kr-81	2.29e+5	y	8.1e+05	2.2e-05
Kr-81m	13.10	s	5.6e+03	1.5e-07
Kr-83m	1.83	h	2.4e+07	6.6e-04
Kr-85	10.756	y	4.6e+04	1.3e-06
Kr-85m	4.480	h	4.3e+03	1.2e-07
Kr-87	76.3	m	7.1e+02	1.9e-08
Kr-88	2.84	h	3.2e+02	8.6e-09
Kr-89	3.15	m	3.1e+02	8.4e-09
Rubidium				
Rb-77	3.77	m	4.1e+02	1.1e-08
Rb-78	17.66	m	1.5e+02	4.1e-09
Rb-78m	5.74	m	2.0e+02	5.4e-09
Rb-79	22.9	m	4.6e+02	1.2e-08
Rb-80	33.4	s	5.0e+02	1.3e-08

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Rb-81	4.576	h	1.4e+03	3.7e-08
Rb-81m	30.5	m	2.9e+04	7.9e-07
Rb-82	1.273	m	5.6e+02	1.5e-08
Rb-82m	6.472	h	2.3e+02	6.2e-09
Rb-83	86.2	d	1.4e+03	3.9e-08
Rb-84	32.77	d	7.4e+02	2.0e-08
Rb-84m	20.26	m	1.9e+03	5.0e-08
Rb-86	18.642	d	4.8e+03	1.3e-07
Rb-86m	1.017	m	1.3e+03	3.4e-08
Rb-87	4.923e10	y	1.8e+05	4.8e-06
Rb-88	17.78	m	7.5e+02	2.0e-08
Rb-89	15.15	m	2.8e+02	7.5e-09
Rb-90	158	s	2.7e+02	7.3e-09
Rb-90m	258	s	1.9e+02	5.0e-09
Strontium				
Sr-79	2.25	m	5.2e+02	1.4e-08
Sr-80	106.3	m	1.6e+03	4.4e-08
Sr-81	22.3	m	4.8e+02	1.3e-08
Sr-82	25.36	d	5.7e+06	1.5e-04
Sr-83	32.41	h	8.3e+02	2.3e-08
Sr-85	64.84	d	1.4e+03	3.8e-08
Sr-85m	67.63	m	3.3e+03	9.0e-08
Sr-87m	2.815	h	2.2e+03	6.0e-08
Sr-89	50.53	d	1.8e+04	4.8e-07
Sr-90	28.79	y	7.7e+04	2.1e-06
Sr-91	9.63	h	8.9e+02	2.4e-08
Sr-92	2.66	h	4.8e+02	1.3e-08
Sr-93	7.423	m	2.8e+02	7.7e-09
Sr-94	75.3	s	4.4e+02	1.2e-08
Yttrium				
Y-81	70.4	s	5.2e+02	1.4e-08
Y-83	7.08	m	4.7e+02	1.3e-08
Y-83m	2.85	m	7.8e+02	2.1e-08
Y-84m	39.5	m	1.7e+02	4.5e-09
Y-85	2.68	h	6.2e+02	1.7e-08
Y-85m	4.86	h	4.9e+02	1.3e-08
Y-86	14.74	h	1.8e+02	5.0e-09
Y-86m	48	m	3.3e+03	8.8e-08
Y-87	79.8	h	1.6e+03	4.3e-08
Y-87m	13.37	h	2.3e+03	6.2e-08
Y-88	106.65	d	2.4e+02	6.5e-09
Y-89m	15.663	s	7.4e+02	2.0e-08
Y-90	64.10	h	9.7e+03	2.6e-07
Y-90m	3.19	h	1.1e+03	3.0e-08
Y-91	58.51	d	1.6e+04	4.3e-07
Y-91m	49.71	m	1.3e+03	3.6e-08
Y-92	3.54	h	1.8e+03	4.8e-08
Y-93	10.18	h	3.5e+03	9.5e-08

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Y-94	18.7	m	7.0e+02	1.9e-08
Y-95	10.3	m	5.0e+02	1.4e-08
Zirconium				
Zr-85	7.86	m	4.4e+02	1.2e-08
Zr-86	16.5	h	2.6e+03	7.1e-08
Zr-87	1.68	h	7.0e+02	1.9e-08
Zr-88	83.4	d	1.8e+03	5.0e-08
Zr-89	78.41	h	5.8e+02	1.6e-08
Zr-89m	4.161	m	1.1e+03	2.9e-08
Zr-93	1.53e+6	y	5.6e+06	1.5e-04
Zr-95	64.032	d	9.3e+02	2.5e-08
Zr-97	16.744	h	7.3e+02	2.0e-08
Niobium				
Nb-87	3.75	m	5.1e+02	1.4e-08
Nb-88	14.5	m	1.6e+02	4.2e-09
Nb-88m	7.78	m	1.6e+02	4.3e-09
Nb-89	2.03	h	4.6e+02	1.2e-08
Nb-89m	66	m	5.1e+02	1.4e-08
Nb-90	14.60	h	1.5e+02	4.1e-09
Nb-91	680	y	3.7e+05	1.0e-05
Nb-91m	60.86	d	2.6e+04	7.0e-07
Nb-92	3.47e+7	y	4.5e+02	1.2e-08
Nb-92m	10.15	d	7.0e+02	1.9e-08
Nb-93m	16.13	y	1.1e+07	3.0e-04
Nb-94	2.03e+4	y	4.3e+02	1.2e-08
Nb-94m	6.263	m	1.4e+05	3.8e-06
Nb-95	34.991	d	8.9e+02	2.4e-08
Nb-95m	3.61	d	1.1e+04	3.0e-07
Nb-96	23.35	h	2.7e+02	7.4e-09
Nb-97	72.1	m	9.9e+02	2.7e-08
Nb-98m	51.3	m	2.3e+02	6.2e-09
Nb-99	15.0	s	2.5e+03	6.7e-08
Nb-99m	2.6	m	7.2e+02	2.0e-08
Molybdenum				
Mo-89	2.11	m	4.9e+02	1.3e-08
Mo-90	5.56	h	8.5e+02	2.3e-08
Mo-91	15.49	m	6.3e+02	1.7e-08
Mo-91m	64.6	s	4.7e+02	1.3e-08
Mo-93	4.0e+3	y	2.0e+06	5.4e-05
Mo-93m	6.85	h	2.8e+02	7.7e-09
Mo-99	65.94	h	4.0e+03	1.1e-07
Mo-101	14.61	m	4.4e+02	1.2e-08
Mo-102	11.3	m	1.8e+04	5.0e-07
Technetium				
Tc-91	3.14	m	2.5e+02	6.7e-09
Tc-91m	3.3	m	4.3e+02	1.2e-08
Tc-92	4.25	m	1.7e+02	4.5e-09
Tc-93	2.75	h	4.2e+02	1.1e-08

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Tc-93m	43.5	m	6.7e+02	1.8e-08
Tc-94	293	m	2.6e+02	6.9e-09
Tc-94m	52.0	m	3.3e+02	9.0e-09
Tc-95	20.0	h	8.6e+02	2.3e-08
Tc-95m	61	d	1.0e+03	2.7e-08
Tc-96	4.28	d	2.7e+02	7.3e-09
Tc-96m	51.5	m	1.6e+04	4.3e-07
Tc-97	2.6e+6	y	1.6e+06	4.3e-05
Tc-97m	90.1	d	9.4e+05	2.5e-05
Tc-98	4.2e+6	y	4.8e+02	1.3e-08
Tc-99	2.111e+5	y	2.1e+05	5.7e-06
Tc-99m	6.015	h	5.9e+03	1.6e-07
Tc-101	14.2	m	1.9e+03	5.2e-08
Tc-102	5.28	s	2.5e+03	6.8e-08
Tc-102m	4.35	m	2.6e+02	7.0e-09
Tc-104	18.3	m	2.7e+02	7.3e-09
Tc-105	7.6	m	7.5e+02	2.0e-08
Ruthenium				
Ru-92	3.65	m	3.2e+02	8.8e-09
Ru-94	51.8	m	1.4e+03	3.7e-08
Ru-95	1.643	h	5.5e+02	1.5e-08
Ru-97	2.9	d	3.2e+03	8.5e-08
Ru-103	39.26	d	1.4e+03	3.8e-08
Ru-105	4.44	h	8.9e+02	2.4e-08
Ru-106	373.59	d	3.2e+07	8.6e-04
Ru-107	3.75	m	1.6e+03	4.3e-08
Ru-108	4.55	m	8.0e+03	2.2e-07
Rhodium				
Rh-94	70.6	s	1.6e+02	4.4e-09
Rh-95	5.02	m	2.5e+02	6.8e-09
Rh-95m	1.96	m	7.2e+02	1.9e-08
Rh-96	9.90	m	1.7e+02	4.6e-09
Rh-96m	1.51	m	5.0e+02	1.4e-08
Rh-97	30.7	m	4.6e+02	1.2e-08
Rh-97m	46.2	m	2.9e+02	7.9e-09
Rh-98	8.7	m	3.5e+02	9.6e-09
Rh-99	16.1	d	1.3e+03	3.5e-08
Rh-99m	4.7	h	1.1e+03	2.9e-08
Rh-100	20.8	h	2.4e+02	6.4e-09
Rh-100m	4.6	m	1.6e+04	4.2e-07
Rh-101	3.3	y	2.7e+03	7.2e-08
Rh-101m	4.34	d	2.6e+03	7.0e-08
Rh-102	207	d	1.4e+03	3.7e-08
Rh-102m	3.742	y	3.2e+02	8.6e-09
Rh-103m	56.114	m	6.8e+06	1.8e-04
Rh-104	42.3	s	7.8e+03	2.1e-07
Rh-104m	4.34	m	4.0e+04	1.1e-06
Rh-105	35.36	h	8.5e+03	2.3e-07

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Rh-106	29.80	s	2.1e+03	5.7e-08
Rh-106m	131	m	2.3e+02	6.3e-09
Rh-107	21.7	m	2.1e+03	5.6e-08
Rh-108	16.8	s	1.4e+03	3.8e-08
Rh-109	80	s	1.9e+03	5.2e-08
Palladium				
Pd-96	122	s	4.7e+02	1.3e-08
Pd-97	3.10	m	2.7e+02	7.3e-09
Pd-98	17.7	m	1.8e+03	4.8e-08
Pd-99	21.4	m	5.2e+02	1.4e-08
Pd-100	3.63	d	9.8e+03	2.6e-07
Pd-101	8.47	h	2.1e+03	5.7e-08
Pd-103	16.991	d	7.1e+05	1.9e-05
Pd-107	6.5e+6	y	4.0e+07	1.1e-03
Pd-109	13.7012	h	2.8e+04	7.6e-07
Pd-109m	4.69	m	6.8e+03	1.9e-07
Pd-111	23.4	m	6.2e+03	1.7e-07
Pd-112	21.03	h	3.0e+05	8.1e-06
Pd-114	2.42	m	1.2e+04	3.2e-07
Silver				
Ag-99	124	s	2.8e+02	7.5e-09
Ag-100m	2.24	m	2.2e+02	6.0e-09
Ag-101	11.1	m	4.2e+02	1.1e-08
Ag-102	12.9	m	1.9e+02	5.2e-09
Ag-102m	7.7	m	3.2e+02	8.6e-09
Ag-103	65.7	m	8.1e+02	2.2e-08
Ag-104	69.2	m	2.5e+02	6.7e-09
Ag-104m	33.5	m	3.6e+02	9.7e-09
Ag-105	41.29	d	1.4e+03	3.8e-08
Ag-105m	7.23	m	7.1e+05	1.9e-05
Ag-106	23.96	m	9.5e+02	2.6e-08
Ag-106m	8.28	d	2.4e+02	6.5e-09
Ag-108	2.37	m	1.2e+04	3.2e-07
Ag-108m	418	y	4.3e+02	1.2e-08
Ag-109m	39.6	s	2.2e+05	6.0e-06
Ag-110	24.6	s	5.4e+03	1.5e-07
Ag-110m	249.76	d	2.4e+02	6.5e-09
Ag-111	7.45	d	1.5e+04	4.1e-07
Ag-111m	64.8	s	1.9e+05	5.1e-06
Ag-112	3.130	h	8.2e+02	2.2e-08
Ag-113	5.37	h	5.5e+03	1.5e-07
Ag-113m	68.7	s	3.1e+03	8.5e-08
Ag-114	4.6	s	1.4e+03	3.8e-08
Ag-115	20.0	m	1.2e+03	3.1e-08
Ag-116	2.68	m	2.8e+02	7.5e-09
Ag-117	73.6	s	4.5e+02	1.2e-08
Cadmium				
Cd-101	1.36	m	2.6e+02	7.0e-09

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Cd-102	5.5	m	8.3e+02	2.2e-08
Cd-103	7.3	m	3.1e+02	8.3e-09
Cd-104	57.7	m	3.1e+03	8.5e-08
Cd-105	55.5	m	5.0e+02	1.4e-08
Cd-107	6.50	h	6.8e+04	1.8e-06
Cd-109	461.4	d	1.6e+05	4.3e-06
Cd-111m	48.50	m	2.6e+03	7.1e-08
Cd-113	7.7e+15	y	2.4e+05	6.5e-06
Cd-113m	14.1	y	8.2e+04	2.2e-06
Cd-115	53.46	h	3.3e+03	9.0e-08
Cd-115m	44.6	d	9.2e+03	2.5e-07
Cd-117	2.49	h	6.0e+02	1.6e-08
Cd-117m	3.36	h	3.1e+02	8.5e-09
Cd-118	50.3	m	1.0e+05	2.7e-06
Cd-119	2.69	m	3.8e+02	1.0e-08
Cd-119m	2.20	m	2.7e+02	7.4e-09
Indium				
In-103	60	s	2.3e+02	6.2e-09
In-105	5.07	m	3.4e+02	9.1e-09
In-106	6.2	m	1.9e+02	5.0e-09
In-106m	5.2	m	2.2e+02	6.0e-09
In-107	32.4	m	4.3e+02	1.2e-08
In-108	58.0	m	1.7e+02	4.6e-09
In-108m	39.6	m	2.3e+02	6.1e-09
In-109	4.2	h	1.1e+03	2.9e-08
In-109m	1.34	m	1.1e+03	3.1e-08
In-110	4.9	h	2.2e+02	5.9e-09
In-110m	69.1	m	4.2e+02	1.1e-08
In-111	2.8047	d	1.9e+03	5.0e-08
In-111m	7.7	m	1.5e+03	4.0e-08
In-112	14.97	m	2.5e+03	6.8e-08
In-112m	20.56	m	3.2e+04	8.7e-07
In-113m	1.6579	h	2.8e+03	7.4e-08
In-114	71.9	s	1.2e+04	3.2e-07
In-114m	49.51	d	9.6e+03	2.6e-07
In-115	4.41e+14	y	1.1e+05	3.0e-06
In-115m	4.486	h	4.5e+03	1.2e-07
In-116m	54.41	m	2.6e+02	7.1e-09
In-117	43.2	m	1.0e+03	2.7e-08
In-117m	116.2	m	6.4e+03	1.7e-07
In-118	5.0	s	2.6e+03	7.1e-08
In-118m	4.364	m	2.3e+02	6.3e-09
In-119	2.4	m	8.4e+02	2.3e-08
In-119m	18.0	m	4.7e+03	1.3e-07
In-121	23.1	s	6.7e+02	1.8e-08
In-121m	3.88	m	3.7e+03	1.0e-07
Tin				
Sn-106	1.92	m	5.7e+02	1.5e-08

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Sn-108	10.30	m	1.1e+03	2.9e-08
Sn-109	18.0	m	3.0e+02	8.0e-09
Sn-110	4.11	h	2.6e+03	7.0e-08
Sn-111	35.3	m	1.4e+03	3.7e-08
Sn-113	115.09	d	9.7e+04	2.6e-06
Sn-113m	21.4	m	3.8e+05	1.0e-05
Sn-117m	13.76	d	5.1e+03	1.4e-07
Sn-119m	293.1	d	4.2e+05	1.1e-05
Sn-121	27.03	h	1.7e+05	4.5e-06
Sn-121m	43.9	y	3.9e+05	1.0e-05
Sn-123	129.2	d	1.7e+04	4.6e-07
Sn-123m	40.06	m	4.4e+03	1.2e-07
Sn-125	9.64	d	1.7e+03	4.5e-08
Sn-125m	9.52	m	1.7e+03	4.7e-08
Sn-126	2.30e+5	y	1.8e+04	4.9e-07
Sn-127	2.10	h	3.4e+02	9.2e-09
Sn-127m	4.13	m	1.0e+03	2.8e-08
Sn-128	59.07	m	1.2e+03	3.3e-08
Sn-129	2.23	m	6.1e+02	1.6e-08
Sn-130	3.72	m	7.4e+02	2.0e-08
Sn-130m	1.7	m	6.8e+02	1.8e-08
Antimony				
Sb-111	75	s	4.3e+02	1.2e-08
Sb-113	6.67	m	5.3e+02	1.4e-08
Sb-114	3.49	m	2.4e+02	6.4e-09
Sb-115	32.1	m	7.8e+02	2.1e-08
Sb-116	15.8	m	2.8e+02	7.7e-09
Sb-116m	60.3	m	2.2e+02	5.8e-09
Sb-117	2.80	h	4.3e+03	1.2e-07
Sb-118	3.6	m	8.0e+02	2.2e-08
Sb-118m	5.00	h	2.6e+02	7.0e-09
Sb-119	38.19	h	2.6e+05	6.9e-06
Sb-120	15.89	m	1.5e+03	4.1e-08
Sb-120m	5.76	d	2.7e+02	7.4e-09
Sb-122	2.7238	d	1.4e+03	3.9e-08
Sb-122m	4.191	m	2.2e+04	5.9e-07
Sb-124	60.20	d	3.5e+02	9.4e-09
Sb-124m	93	s	1.5e+03	4.2e-08
Sb-124n	20.2	m	6.8e+09	1.8e-01
Sb-125	2.75856	y	1.6e+03	4.4e-08
Sb-126	12.35	d	2.5e+02	6.7e-09
Sb-126m	19.15	m	4.3e+02	1.2e-08
Sb-127	3.85	d	9.7e+02	2.6e-08
Sb-128	9.01	h	2.2e+02	5.9e-09
Sb-128m	10.4	m	3.5e+02	9.4e-09
Sb-129	4.40	h	4.5e+02	1.2e-08
Sb-130	39.5	m	2.0e+02	5.5e-09
Sb-130m	6.3	m	2.4e+02	6.5e-09

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Sb-131	23.03	m	3.1e+02	8.4e-09
Sb-133	2.5	m	2.3e+02	6.3e-09
Tellurium				
Te-113	1.7	m	2.8e+02	7.6e-09
Te-114	15.2	m	5.2e+02	1.4e-08
Te-115	5.8	m	2.9e+02	7.8e-09
Te-115m	6.7	m	2.5e+02	6.8e-09
Te-116	2.49	h	8.7e+03	2.4e-07
Te-117	62	m	4.3e+02	1.1e-08
Te-118	6.00	d	2.5e+05	6.9e-06
Te-119	16.05	h	9.0e+02	2.4e-08
Te-119m	4.70	d	4.5e+02	1.2e-08
Te-121	19.16	d	1.2e+03	3.3e-08
Te-121m	154	d	3.5e+03	9.4e-08
Te-123	6.00e+14	y	1.5e+08	3.9e-03
Te-123m	119.25	d	5.4e+03	1.5e-07
Te-125m	57.40	d	1.1e+05	3.0e-06
Te-127	9.35	h	4.4e+04	1.2e-06
Te-127m	109	d	3.0e+05	8.1e-06
Te-129	69.6	m	7.5e+03	2.0e-07
Te-129m	33.6	d	1.5e+04	4.1e-07
Te-131	25.0	m	1.5e+03	4.0e-08
Te-131m	30	h	4.6e+02	1.2e-08
Te-132	3.204	d	3.4e+03	9.1e-08
Te-133	12.5	m	5.3e+02	1.4e-08
Te-133m	55.4	m	3.6e+02	9.6e-09
Te-134	41.8	m	8.0e+02	2.2e-08
Iodine				
I-118	13.7	m	3.1e+02	8.3e-09
I-118m	8.5	m	1.8e+02	4.8e-09
I-119	19.1	m	7.4e+02	2.0e-08
I-120	81.6	m	2.4e+02	6.4e-09
I-120m	53	m	1.9e+02	5.1e-09
I-121	2.12	h	1.8e+03	5.0e-08
I-122	3.63	m	6.6e+02	1.8e-08
I-123	13.27	h	4.8e+03	1.3e-07
I-124	4.1760	d	6.0e+02	1.6e-08
I-125	59.400	d	1.0e+05	2.7e-06
I-126	12.93	d	1.6e+03	4.3e-08
I-128	24.99	m	5.8e+03	1.6e-07
I-129	1.57e+7	y	1.1e+05	3.0e-06
I-130	12.36	h	3.2e+02	8.6e-09
I-130m	8.84	m	5.9e+03	1.6e-07
I-131	8.02070	d	1.8e+03	4.9e-08
I-132	2.295	h	2.9e+02	8.0e-09
I-132m	1.387	h	2.0e+03	5.5e-08
I-133	20.8	h	1.1e+03	2.9e-08
I-134	52.5	m	2.5e+02	6.9e-09

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
I-134m	3.60	m	2.6e+03	7.1e-08
I-135	6.57	h	4.1e+02	1.1e-08
Xenon				
Xe-120	40	m	1.9e+03	5.1e-08
Xe-121	40.1	m	4.4e+02	1.2e-08
Xe-122	20.1	h	1.5e+04	3.9e-07
Xe-123	2.08	h	1.1e+03	2.9e-08
Xe-125	16.9	h	2.9e+03	7.9e-08
Xe-127	36.4	d	2.8e+03	7.6e-08
Xe-127m	69.2	s	4.8e+03	1.3e-07
Xe-129m	8.88	d	3.7e+04	1.0e-06
Xe-131m	11.84	d	9.6e+04	2.6e-06
Xe-133	5.243	d	2.4e+04	6.5e-07
Xe-133m	2.19	d	2.5e+04	6.8e-07
Xe-135	9.14	h	2.7e+03	7.3e-08
Xe-135m	15.29	m	1.6e+03	4.4e-08
Xe-137	3.818	m	2.0e+03	5.3e-08
Xe-138	14.08	m	5.5e+02	1.5e-08
Cesium				
Cs-121	155	s	5.2e+02	1.4e-08
Cs-121m	122	s	5.4e+02	1.4e-08
Cs-123	5.88	m	6.0e+02	1.6e-08
Cs-124	30.8	s	5.1e+02	1.4e-08
Cs-125	45	m	9.0e+02	2.4e-08
Cs-126	1.64	m	5.5e+02	1.5e-08
Cs-127	6.25	h	1.7e+03	4.6e-08
Cs-128	3.640	m	7.3e+02	2.0e-08
Cs-129	32.06	h	2.8e+03	7.5e-08
Cs-130	29.21	m	1.3e+03	3.6e-08
Cs-130m	3.46	m	1.8e+04	4.7e-07
Cs-131	9.689	d	1.6e+05	4.2e-06
Cs-132	6.479	d	9.8e+02	2.7e-08
Cs-134	2.0648	y	4.4e+02	1.2e-08
Cs-134m	2.903	h	4.0e+04	1.1e-06
Cs-135	2.3e+6	y	2.6e+05	7.0e-06
Cs-135m	53	m	4.2e+02	1.1e-08
Cs-136	13.16	d	3.2e+02	8.5e-09
Cs-137	30.1671	y	7.9e+04	2.1e-06
Cs-138	33.41	m	2.6e+02	7.1e-09
Cs-138m	2.91	m	1.6e+03	4.2e-08
Cs-139	9.27	m	1.4e+03	3.9e-08
Cs-140	63.7	s	3.2e+02	8.8e-09
Barium				
Ba-124	11.0	m	1.2e+03	3.3e-08
Ba-126	100	m	1.2e+03	3.3e-08
Ba-127	12.7	m	9.1e+02	2.5e-08
Ba-128	2.43	d	1.5e+04	4.1e-07
Ba-129	2.23	h	2.1e+03	5.7e-08

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Ba-129m	2.16	h	4.3e+02	1.2e-08
Ba-131	11.50	d	1.6e+03	4.2e-08
Ba-131m	14.6	m	1.2e+04	3.2e-07
Ba-133	10.52	y	2.0e+03	5.3e-08
Ba-133m	38.9	h	1.3e+04	3.5e-07
Ba-135m	28.7	h	1.5e+04	4.0e-07
Ba-137m	2.552	m	1.2e+03	3.1e-08
Ba-139	83.06	m	6.3e+03	1.7e-07
Ba-140	12.752	d	3.6e+03	9.8e-08
Ba-141	18.27	m	6.8e+02	1.8e-08
Ba-142	10.6	m	6.3e+02	1.7e-08
Lanthanum				
La-128	5.18	m	2.3e+02	6.2e-09
La-129	11.6	m	7.3e+02	2.0e-08
La-130	8.7	m	2.9e+02	7.9e-09
La-131	59	m	1.1e+03	2.9e-08
La-132	4.8	h	3.3e+02	8.8e-09
La-132m	24.3	m	1.1e+03	2.8e-08
La-133	3.912	h	4.9e+03	1.3e-07
La-134	6.45	m	9.0e+02	2.4e-08
La-135	19.5	h	4.3e+04	1.2e-06
La-136	9.87	m	1.7e+03	4.5e-08
La-137	6.0e+4	y	1.2e+05	3.3e-06
La-138	1.02e+11	y	5.3e+02	1.4e-08
La-140	1.6781	d	2.8e+02	7.5e-09
La-141	3.92	h	6.6e+03	1.8e-07
La-142	91.1	m	2.6e+02	7.0e-09
La-143	14.2	m	1.8e+03	4.8e-08
Cerium				
Ce-130	22.9	m	1.5e+03	3.9e-08
Ce-131	10.2	m	4.1e+02	1.1e-08
Ce-132	3.51	h	2.9e+03	7.8e-08
Ce-133	97	m	1.3e+03	3.6e-08
Ce-133m	4.9	h	3.9e+02	1.1e-08
Ce-134	3.16	d	8.6e+04	2.3e-06
Ce-135	17.7	h	8.6e+02	2.3e-08
Ce-137	9.0	h	3.9e+04	1.1e-06
Ce-137m	34.4	h	1.7e+04	4.5e-07
Ce-139	137.641	d	5.3e+03	1.4e-07
Ce-141	32.508	d	9.4e+03	2.5e-07
Ce-143	33.039	h	2.5e+03	6.7e-08
Ce-144	284.91	d	3.9e+04	1.0e-06
Ce-145	3.01	m	8.2e+02	2.2e-08
Praseodymium				
Pr-134	11	m	2.1e+02	5.7e-09
Pr-134m	17	m	2.7e+02	7.4e-09
Pr-135	24	m	7.7e+02	2.1e-08
Pr-136	13.1	m	3.0e+02	8.2e-09

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Pr-137	1.28	h	1.9e+03	5.1e-08
Pr-138	1.45	m	7.6e+02	2.1e-08
Pr-138m	2.12	h	2.7e+02	7.4e-09
Pr-139	4.41	h	6.1e+03	1.6e-07
Pr-140	3.39	m	1.2e+03	3.2e-08
Pr-142	19.12	h	5.6e+03	1.5e-07
Pr-143	13.57	d	4.0e+04	1.1e-06
Pr-144	17.28	m	5.3e+03	1.4e-07
Pr-144m	7.2	m	1.4e+05	3.7e-06
Pr-145	5.984	h	1.1e+04	2.8e-07
Pr-146	24.15	m	5.8e+02	1.6e-08
Pr-147	13.4	m	1.3e+03	3.5e-08
Pr-148	2.29	m	5.8e+02	1.6e-08
Pr-148m	2.01	m	6.4e+02	1.7e-08
Neodymium				
Nd-134	8.5	m	1.3e+03	3.6e-08
Nd-135	12.4	m	5.3e+02	1.4e-08
Nd-136	50.65	m	2.8e+03	7.7e-08
Nd-137	38.5	m	5.8e+02	1.6e-08
Nd-138	5.04	h	3.1e+04	8.4e-07
Nd-139	29.7	m	1.6e+03	4.2e-08
Nd-139m	5.50	h	4.3e+02	1.2e-08
Nd-140	3.37	d	8.4e+04	2.3e-06
Nd-141	2.49	h	1.2e+04	3.2e-07
Nd-141m	62.0	s	9.8e+02	2.6e-08
Nd-147	10.98	d	5.2e+03	1.4e-07
Nd-149	1.728	h	1.8e+03	4.9e-08
Nd-151	12.44	m	7.7e+02	2.1e-08
Nd-152	11.4	m	4.0e+03	1.1e-07
Promethium				
Pm-136	107	s	2.3e+02	6.3e-09
Pm-137m	2.4	m	3.7e+02	1.0e-08
Pm-139	4.15	m	6.8e+02	1.8e-08
Pm-140	9.2	s	5.5e+02	1.5e-08
Pm-140m	5.95	m	2.2e+02	5.9e-09
Pm-141	20.90	m	8.8e+02	2.4e-08
Pm-142	40.5	s	7.1e+02	1.9e-08
Pm-143	265	d	2.3e+03	6.3e-08
Pm-144	363	d	4.5e+02	1.2e-08
Pm-145	17.7	y	6.8e+04	1.8e-06
Pm-146	5.53	y	9.3e+02	2.5e-08
Pm-147	2.6234	y	4.8e+05	1.3e-05
Pm-148	5.368	d	1.1e+03	2.8e-08
Pm-148m	41.29	d	3.4e+02	9.3e-09
Pm-149	53.08	h	2.1e+04	5.7e-07
Pm-150	2.68	h	4.3e+02	1.2e-08
Pm-151	28.40	h	2.1e+03	5.7e-08
Pm-152	4.12	m	1.7e+03	4.6e-08

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Pm-152m	7.52	m	4.3e+02	1.2e-08
Pm-153	5.25	m	6.4e+03	1.7e-07
Pm-154	1.73	m	3.5e+02	9.4e-09
Pm-154m	2.68	m	3.6e+02	9.6e-09
Samarium				
Sm-139	2.57	m	4.5e+02	1.2e-08
Sm-140	14.82	m	1.2e+03	3.3e-08
Sm-141	10.2	m	4.7e+02	1.3e-08
Sm-141m	22.6	m	3.4e+02	9.3e-09
Sm-142	72.49	m	7.4e+03	2.0e-07
Sm-143	8.75	m	1.2e+03	3.4e-08
Sm-143m	66	s	9.9e+02	2.7e-08
Sm-145	340	d	3.0e+04	8.2e-07
Sm-151	90	y	4.9e+06	1.3e-04
Sm-153	46.50	h	1.3e+04	3.6e-07
Sm-155	22.3	m	5.6e+03	1.5e-07
Sm-156	9.4	h	6.4e+03	1.7e-07
Sm-157	8.03	m	1.5e+03	4.0e-08
Europium				
Eu-142	2.34	s	4.5e+02	1.2e-08
Eu-142m	1.223	m	1.9e+02	5.1e-09
Eu-143	2.59	m	5.5e+02	1.5e-08
Eu-144	10.2	s	5.2e+02	1.4e-08
Eu-145	5.93	d	5.2e+02	1.4e-08
Eu-146	4.61	d	2.8e+02	7.6e-09
Eu-147	24.1	d	1.5e+03	4.2e-08
Eu-148	54.5	d	3.1e+02	8.3e-09
Eu-149	93.1	d	1.6e+04	4.4e-07
Eu-150	36.9	y	4.5e+02	1.2e-08
Eu-150m	12.8	h	1.1e+04	2.9e-07
Eu-152	13.537	y	5.8e+02	1.6e-08
Eu-152m	9.3116	h	2.1e+03	5.6e-08
Eu-152n	96	m	1.3e+04	3.5e-07
Eu-154	8.593	y	5.3e+02	1.4e-08
Eu-154m	46.0	m	1.6e+04	4.4e-07
Eu-155	4.7611	y	1.5e+04	4.1e-07
Eu-156	15.19	d	5.1e+02	1.4e-08
Eu-157	15.18	h	2.4e+03	6.5e-08
Eu-158	45.9	m	4.9e+02	1.3e-08
Eu-159	18.1	m	2.1e+03	5.6e-08
Gadolinium				
Gd-142	70.2	s	6.2e+02	1.7e-08
Gd-143m	110.0	s	3.1e+02	8.3e-09
Gd-144	4.47	m	7.0e+02	1.9e-08
Gd-145	23.0	m	2.6e+02	7.1e-09
Gd-145m	85	s	1.0e+03	2.7e-08
Gd-146	48.27	d	3.7e+03	9.9e-08
Gd-147	38.1	h	5.0e+02	1.3e-08

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Gd-149	9.28	d	1.4e+03	3.8e-08
Gd-151	124	d	1.5e+04	4.2e-07
Gd-153	240.4	d	1.1e+04	2.9e-07
Gd-159	18.479	h	1.1e+04	2.9e-07
Gd-162	8.4	m	1.6e+03	4.4e-08
Terbium				
Tb-146	23	s	1.7e+02	4.7e-09
Tb-147	1.64	h	3.0e+02	8.2e-09
Tb-147m	1.87	m	3.4e+02	9.1e-09
Tb-148	60	m	2.7e+02	7.4e-09
Tb-148m	2.20	m	2.2e+02	5.9e-09
Tb-149	4.118	h	4.9e+02	1.3e-08
Tb-149m	4.16	m	5.0e+02	1.3e-08
Tb-150	3.48	h	2.6e+02	7.1e-09
Tb-150m	5.8	m	2.8e+02	7.5e-09
Tb-151	17.609	h	7.2e+02	1.9e-08
Tb-151m	25	s	9.9e+03	2.7e-07
Tb-152	17.5	h	4.4e+02	1.2e-08
Tb-152m	4.2	m	9.6e+02	2.6e-08
Tb-153	2.34	d	2.3e+03	6.3e-08
Tb-154	21.5	h	2.8e+02	7.6e-09
Tb-155	5.32	d	5.2e+03	1.4e-07
Tb-156	5.35	d	3.5e+02	9.5e-09
Tb-156m	24.4	h	4.0e+04	1.1e-06
Tb-156n	5.3	h	3.6e+05	9.7e-06
Tb-157	71	y	3.8e+05	1.0e-05
Tb-158	180	y	8.6e+02	2.3e-08
Tb-160	72.3	d	5.9e+02	1.6e-08
Tb-161	6.906	d	3.1e+04	8.5e-07
Tb-162	7.60	m	6.1e+02	1.6e-08
Tb-163	19.5	m	8.7e+02	2.4e-08
Tb-164	3.0	m	2.7e+02	7.3e-09
Tb-165	2.11	m	7.3e+02	2.0e-08
Dysprosium				
Dy-148	3.3	m	9.9e+02	2.7e-08
Dy-149	4.20	m	4.1e+02	1.1e-08
Dy-150	7.17	m	2.7e+03	7.2e-08
Dy-151	17.9	m	4.9e+02	1.3e-08
Dy-152	2.38	h	2.7e+03	7.3e-08
Dy-153	6.4	h	8.2e+02	2.2e-08
Dy-155	9.9	h	1.1e+03	2.9e-08
Dy-157	8.14	h	2.2e+03	5.9e-08
Dy-159	144.4	d	3.7e+04	1.0e-06
Dy-165	2.334	h	1.4e+04	3.7e-07
Dy-165m	1.257	m	4.4e+04	1.2e-06
Dy-166	81.6	h	2.4e+04	6.5e-07
Dy-167	6.20	m	1.2e+03	3.3e-08
Dy-168	8.7	m	1.7e+03	4.7e-08

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μCi/mL)
Holmium				
Ho-150	76.8	s	3.3e+02	8.9e-09
Ho-153	2.01	m	6.6e+02	1.8e-08
Ho-153m	9.3	m	6.4e+02	1.7e-08
Ho-154	11.76	m	3.5e+02	9.4e-09
Ho-154m	3.10	m	2.8e+02	7.6e-09
Ho-155	48	m	1.1e+03	3.1e-08
Ho-156	56	m	3.1e+02	8.5e-09
Ho-157	12.6	m	1.3e+03	3.5e-08
Ho-159	33.05	m	2.1e+03	5.6e-08
Ho-160	25.6	m	4.1e+02	1.1e-08
Ho-161	2.48	h	2.7e+04	7.3e-07
Ho-162	15.0	m	4.9e+03	1.3e-07
Ho-162m	67.0	m	1.3e+03	3.4e-08
Ho-164	29	m	3.4e+04	9.1e-07
Ho-164m	38.0	m	3.5e+04	9.6e-07
Ho-166	26.80	h	9.5e+03	2.6e-07
Ho-166m	1.20e+3	y	4.3e+02	1.2e-08
Ho-167	3.1	h	1.9e+03	5.2e-08
Ho-168	2.99	m	7.3e+02	2.0e-08
Ho-168m	132	s	2.5e+05	6.7e-06
Ho-170	2.76	m	3.9e+02	1.0e-08
Erbium				
Er-154	3.73	m	1.5e+04	4.0e-07
Er-156	19.5	m	2.0e+04	5.5e-07
Er-159	36	m	7.1e+02	1.9e-08
Er-161	3.21	h	7.0e+02	1.9e-08
Er-163	75.0	m	3.8e+04	1.0e-06
Er-165	10.36	h	4.1e+04	1.1e-06
Er-167m	2.269	s	7.9e+03	2.1e-07
Er-169	9.40	d	2.1e+05	5.7e-06
Er-171	7.516	h	1.9e+03	5.1e-08
Er-172	49.3	h	1.4e+03	3.8e-08
Er-173	1.434	m	8.1e+02	2.2e-08
Thulium				
Tm-161	30.2	m	5.3e+02	1.4e-08
Tm-162	21.70	m	3.3e+02	9.1e-09
Tm-163	1.810	h	5.2e+02	1.4e-08
Tm-164	2.0	m	8.4e+02	2.3e-08
Tm-165	30.06	h	1.3e+03	3.6e-08
Tm-166	7.70	h	3.3e+02	9.0e-09
Tm-167	9.25	d	6.0e+03	1.6e-07
Tm-168	93.1	d	5.7e+02	1.5e-08
Tm-170	128.6	d	3.5e+04	9.3e-07
Tm-171	1.92	y	1.3e+06	3.5e-05
Tm-172	63.6	h	1.3e+03	3.5e-08
Tm-173	8.24	h	1.8e+03	4.7e-08
Tm-174	5.4	m	3.8e+02	1.0e-08

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Tm-175	15.2	m	6.2e+02	1.7e-08
Tm-176	1.85	m	3.2e+02	8.7e-09
Ytterbium				
Yb-162	18.87	m	3.2e+03	8.6e-08
Yb-163	11.05	m	9.3e+02	2.5e-08
Yb-164	75.8	m	2.2e+04	5.9e-07
Yb-165	9.9	m	2.3e+03	6.3e-08
Yb-166	56.7	h	1.6e+04	4.3e-07
Yb-167	17.5	m	3.4e+03	9.3e-08
Yb-169	32.026	d	2.8e+03	7.6e-08
Yb-175	4.185	d	1.7e+04	4.5e-07
Yb-177	1.911	h	3.1e+03	8.4e-08
Yb-178	74	m	1.5e+04	4.1e-07
Yb-179	8.0	m	6.8e+02	1.8e-08
Lutetium				
Lu-165	10.74	m	6.1e+02	1.7e-08
Lu-167	51.5	m	3.9e+02	1.1e-08
Lu-169	34.06	h	5.1e+02	1.4e-08
Lu-169m	160	s	9.3e+08	2.5e-02
Lu-170	2.012	d	2.5e+02	6.7e-09
Lu-171	8.24	d	1.1e+03	3.0e-08
Lu-171m	79	s	3.9e+06	1.1e-04
Lu-172	6.70	d	3.5e+02	9.4e-09
Lu-172m	3.7	m	8.4e+08	2.3e-02
Lu-173	1.37	y	5.2e+03	1.4e-07
Lu-174	3.31	y	7.4e+03	2.0e-07
Lu-174m	142	d	2.0e+04	5.5e-07
Lu-176	3.85e+10	y	1.5e+03	4.1e-08
Lu-176m	3.635	h	1.9e+04	5.2e-07
Lu-177	6.647	d	1.9e+04	5.1e-07
Lu-177m	160.4	d	7.5e+02	2.0e-08
Lu-178	28.4	m	3.8e+03	1.0e-07
Lu-178m	23.1	m	6.9e+02	1.9e-08
Lu-179	4.59	h	1.2e+04	3.2e-07
Lu-180	5.7	m	4.3e+02	1.2e-08
Lu-181	3.5	m	1.1e+03	3.1e-08
Hafnium				
Hf-167	2.05	m	1.1e+03	3.0e-08
Hf-169	3.24	m	1.1e+03	3.0e-08
Hf-170	16.01	h	1.7e+03	4.7e-08
Hf-172	1.87	y	1.2e+04	3.1e-07
Hf-173	23.6	h	2.0e+03	5.3e-08
Hf-175	70	d	2.2e+03	5.9e-08
Hf-177m	51.4	m	3.2e+02	8.7e-09
Hf-178m	31	y	3.2e+02	8.7e-09
Hf-179m	25.05	d	8.0e+02	2.2e-08
Hf-180m	5.5	h	7.4e+02	2.0e-08
Hf-181	42.39	d	1.3e+03	3.6e-08

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Hf-182	9e+6	y	3.1e+03	8.2e-08
Hf-182m	61.5	m	7.8e+02	2.1e-08
Hf-183	1.067	h	8.7e+02	2.4e-08
Hf-184	4.12	h	3.0e+03	8.2e-08
Tantalum				
Ta-170	6.76	m	5.8e+02	1.6e-08
Ta-172	36.8	m	3.9e+02	1.1e-08
Ta-173	3.14	h	1.2e+03	3.3e-08
Ta-174	1.14	h	6.9e+02	1.9e-08
Ta-175	10.5	h	6.2e+02	1.7e-08
Ta-176	8.09	h	2.9e+02	7.9e-09
Ta-177	56.56	h	1.6e+04	4.4e-07
Ta-178	9.31	m	7.0e+03	1.9e-07
Ta-178m	2.36	h	6.4e+02	1.7e-08
Ta-179	1.82	y	5.5e+04	1.5e-06
Ta-180	8.152	h	2.5e+04	6.9e-07
Ta-182	114.43	d	5.2e+02	1.4e-08
Ta-182m	15.84	m	3.1e+03	8.3e-08
Ta-183	5.1	d	2.6e+03	7.1e-08
Ta-184	8.7	h	4.4e+02	1.2e-08
Ta-185	49.4	m	3.9e+03	1.1e-07
Ta-186	10.5	m	4.6e+02	1.3e-08
Tungsten				
W-177	132	m	7.9e+02	2.1e-08
W-178	21.6	d	9.0e+04	2.4e-06
W-179	37.05	m	2.7e+04	7.2e-07
W-179m	6.40	m	1.8e+04	4.7e-07
W-181	121.2	d	3.4e+04	9.1e-07
W-185	75.1	d	1.4e+05	3.9e-06
W-185m	1.597	m	3.6e+04	9.7e-07
W-187	23.72	h	1.5e+03	4.1e-08
W-188	69.78	d	1.4e+05	3.7e-06
W-190	30.0	m	5.3e+03	1.4e-07
Rhenium				
Re-178	13.2	m	3.7e+02	1.0e-08
Re-179	19.5	m	6.4e+02	1.7e-08
Re-180	2.44	m	5.7e+02	1.5e-08
Re-181	19.9	h	9.0e+02	2.4e-08
Re-182	64.0	h	3.9e+02	1.0e-08
Re-182m	12.7	h	5.6e+02	1.5e-08
Re-183	70.0	d	6.2e+03	1.7e-07
Re-184	38.0	d	7.8e+02	2.1e-08
Re-184m	169	d	1.9e+03	5.2e-08
Re-186	3.7183	d	2.0e+04	5.4e-07
Re-186m	2.00e+5	y	8.9e+04	2.4e-06
Re-188	17.0040	h	6.1e+03	1.6e-07
Re-188m	18.59	m	1.6e+04	4.4e-07
Re-189	24.3	h	1.0e+04	2.7e-07

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Re-190	3.1	m	5.0e+02	1.4e-08
Re-190m	3.2	h	7.4e+02	2.0e-08
Osmium				
Os-180	21.5	m	7.2e+03	1.9e-07
Os-181	105	m	5.0e+02	1.3e-08
Os-182	22.10	h	1.7e+03	4.7e-08
Os-183	13.0	h	1.2e+03	3.2e-08
Os-183m	9.9	h	6.7e+02	1.8e-08
Os-185	93.6	d	1.0e+03	2.8e-08
Os-189m	5.8	h	2.2e+08	5.9e-03
Os-190m	9.9	m	4.4e+02	1.2e-08
Os-191	15.4	d	1.2e+04	3.1e-07
Os-191m	13.10	h	2.1e+05	5.8e-06
Os-193	30.11	h	8.6e+03	2.3e-07
Os-194	6.0	y	6.6e+05	1.8e-05
Os-196	34.9	m	7.3e+03	2.0e-07
Iridium				
Ir-180	1.5	m	4.1e+02	1.1e-08
Ir-182	15	m	4.6e+02	1.3e-08
Ir-183	58	m	5.7e+02	1.5e-08
Ir-184	3.09	h	3.4e+02	9.3e-09
Ir-185	14.4	h	8.0e+02	2.2e-08
Ir-186	16.64	h	4.1e+02	1.1e-08
Ir-186m	1.92	h	5.4e+02	1.4e-08
Ir-187	10.5	h	2.3e+03	6.1e-08
Ir-188	41.5	h	3.1e+02	8.3e-09
Ir-189	13.2	d	1.4e+04	3.7e-07
Ir-190	11.78	d	4.8e+02	1.3e-08
Ir-190m	1.120	h	2.0e+08	5.4e-03
Ir-190n	3.087	h	2.1e+04	5.6e-07
Ir-191m	4.94	s	1.3e+04	3.5e-07
Ir-192	73.827	d	8.6e+02	2.3e-08
Ir-192m	1.45	m	1.1e+07	2.9e-04
Ir-192n	241	y	4.9e+05	1.3e-05
Ir-193m	10.53	d	3.7e+06	9.9e-05
Ir-194	19.28	h	4.6e+03	1.2e-07
Ir-194m	171	d	3.0e+02	8.1e-09
Ir-195	2.5	h	1.2e+04	3.3e-07
Ir-195m	3.8	h	1.9e+03	5.1e-08
Ir-196	52	s	2.1e+03	5.7e-08
Ir-196m	1.40	h	2.8e+02	7.6e-09
Platinum				
Pt-184	17.3	m	1.1e+03	2.9e-08
Pt-186	2.08	h	1.1e+03	2.8e-08
Pt-187	2.35	h	1.2e+03	3.2e-08
Pt-188	10.2	d	4.1e+03	1.1e-07
Pt-189	10.87	h	1.6e+03	4.2e-08
Pt-191	2.802	d	2.8e+03	7.5e-08

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μCi/mL)
Pt-193	50	y	8.2e+07	2.2e-03
Pt-193m	4.33	d	1.0e+05	2.8e-06
Pt-195m	4.02	d	1.5e+04	4.0e-07
Pt-197	19.8915	h	2.6e+04	7.0e-07
Pt-197m	95.41	m	1.0e+04	2.8e-07
Pt-199	30.80	m	3.0e+03	8.1e-08
Pt-200	12.5	h	1.3e+04	3.5e-07
Pt-202	44	h	1.5e+04	4.1e-07
Gold				
Au-186	10.7	m	4.3e+02	1.2e-08
Au-187	8.4	m	6.3e+02	1.7e-08
Au-190	42.8	m	2.7e+02	7.3e-09
Au-191	3.18	h	1.2e+03	3.4e-08
Au-192	4.94	h	3.4e+02	9.1e-09
Au-193	17.65	h	5.3e+03	1.4e-07
Au-193m	3.9	s	3.8e+03	1.0e-07
Au-194	38.02	h	6.5e+02	1.8e-08
Au-195	186.098	d	1.4e+04	3.8e-07
Au-195m	30.5	s	3.7e+03	1.0e-07
Au-196	6.183	d	1.6e+03	4.2e-08
Au-196m	9.6	h	3.4e+03	9.1e-08
Au-198	2.69517	d	1.7e+03	4.5e-08
Au-198m	2.27	d	1.5e+03	3.9e-08
Au-199	3.139	d	7.9e+03	2.1e-07
Au-200	48.4	m	2.1e+03	5.5e-08
Au-200m	18.7	h	3.5e+02	9.5e-09
Au-201	26	m	1.2e+04	3.2e-07
Au-202	28.8	s	2.6e+03	7.1e-08
Mercury				
Hg-190	20.0	m	4.3e+03	1.2e-07
Hg-191m	50.8	m	4.6e+02	1.3e-08
Hg-192	4.85	h	3.0e+03	8.0e-08
Hg-193	3.80	h	8.2e+02	2.2e-08
Hg-193m	11.8	h	6.7e+02	1.8e-08
Hg-194	440	y	5.4e+07	1.5e-03
Hg-195	10.53	h	4.0e+03	1.1e-07
Hg-195m	41.6	h	3.8e+03	1.0e-07
Hg-197	64.94	h	1.6e+04	4.3e-07
Hg-197m	23.8	h	8.8e+03	2.4e-07
Hg-199m	42.66	m	4.3e+03	1.2e-07
Hg-203	46.612	d	3.0e+03	8.2e-08
Hg-205	5.2	m	1.7e+04	4.7e-07
Hg-206	8.15	m	5.0e+03	1.3e-07
Hg-207	2.9	m	2.4e+02	6.5e-09
Thallium				
Tl-190	2.6	m	4.8e+02	1.3e-08
Tl-190m	3.7	m	2.7e+02	7.4e-09
Tl-194	33.0	m	7.3e+02	2.0e-08

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
TI-194m	32.8	m	2.7e+02	7.4e-09
TI-195	1.16	h	5.4e+02	1.5e-08
TI-196	1.84	h	3.5e+02	9.5e-09
TI-197	2.84	h	1.6e+03	4.3e-08
TI-198	5.3	h	3.3e+02	8.9e-09
TI-198m	1.87	h	5.8e+02	1.6e-08
TI-199	7.42	h	3.2e+03	8.5e-08
TI-200	26.1	h	5.2e+02	1.4e-08
TI-201	72.912	h	1.1e+04	3.0e-07
TI-202	12.23	d	1.6e+03	4.3e-08
TI-204	3.78	y	5.4e+04	1.5e-06
TI-206	4.200	m	2.0e+04	5.3e-07
TI-206m	3.74	m	2.9e+02	7.7e-09
TI-207	4.77	m	2.0e+04	5.5e-07
TI-208	3.053	m	1.8e+02	5.0e-09
TI-209	2.161	m	3.0e+02	8.2e-09
TI-210	1.30	m	2.3e+02	6.2e-09
Lead				
Pb-194	12.0	m	6.3e+02	1.7e-08
Pb-195m	15	m	4.2e+02	1.1e-08
Pb-196	37	m	1.5e+03	4.1e-08
Pb-197	8	m	4.4e+02	1.2e-08
Pb-197m	43	m	6.0e+02	1.6e-08
Pb-198	2.4	h	1.7e+03	4.6e-08
Pb-199	90	m	6.5e+02	1.8e-08
Pb-200	21.5	h	4.1e+03	1.1e-07
Pb-201	9.33	h	9.4e+02	2.5e-08
Pb-201m	61	s	1.9e+03	5.2e-08
Pb-202	5.25e+4	y	4.8e+07	1.3e-03
Pb-202m	3.53	h	3.4e+02	9.3e-09
Pb-203	51.873	h	2.5e+03	6.7e-08
Pb-204m	67.2	m	3.3e+02	8.9e-09
Pb-205	1.53e+7	y	4.7e+07	1.3e-03
Pb-209	3.253	h	7.5e+04	2.0e-06
Pb-210	22.20	y	7.7e+05	2.1e-05
Pb-211	36.1	m	7.5e+03	2.0e-07
Pb-212	10.64	h	5.2e+03	1.4e-07
Pb-214	26.8	m	2.8e+03	7.4e-08
Bismuth				
Bi-197	9.3	m	3.9e+02	1.1e-08
Bi-200	36.4	m	2.8e+02	7.7e-09
Bi-201	108	m	3.8e+02	1.0e-08
Bi-202	1.72	h	2.5e+02	6.6e-09
Bi-203	11.76	h	2.8e+02	7.5e-09
Bi-204	11.22	h	2.3e+02	6.2e-09
Bi-205	15.31	d	3.9e+02	1.1e-08
Bi-206	6.243	d	2.1e+02	5.6e-09
Bi-207	32.9	y	4.4e+02	1.2e-08

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μCi/mL)
Bi-208	3.68e+5	y	2.3e+02	6.2e-09
Bi-210	5.013	d	3.0e+04	8.1e-07
Bi-210m	3.04e+6	y	2.8e+03	7.5e-08
Bi-211	2.14	m	1.5e+04	4.1e-07
Bi-212	60.55	m	4.9e+03	1.3e-07
Bi-212n	7.0	m	2.0e+04	5.4e-07
Bi-213	45.59	m	4.6e+03	1.2e-07
Bi-214	19.9	m	4.3e+02	1.2e-08
Bi-215	7.6	m	2.4e+03	6.4e-08
Bi-216	2.17	m	8.2e+02	2.2e-08
Polonium				
Po-203	36.7	m	4.1e+02	1.1e-08
Po-204	3.53	h	6.1e+02	1.6e-08
Po-205	1.66	h	4.3e+02	1.2e-08
Po-206	8.8	d	5.9e+02	1.6e-08
Po-207	5.80	h	5.3e+02	1.4e-08
Po-208	2.898	y	3.4e+07	9.1e-04
Po-209	102	y	1.1e+05	3.1e-06
Po-210	138.376	d	7.0e+07	1.9e-03
Po-211	0.516	s	8.3e+04	2.3e-06
Po-212m	45.1	s	7.8e+03	2.1e-07
Po-213	4.2e-6	s	1.8e+07	4.9e-04
Po-214	1.643e-4	s	8.2e+06	2.2e-04
Po-215	1.781e-3	s	4.0e+06	1.1e-04
Po-216	0.145	s	4.4e+07	1.2e-03
Po-218	3.10	m	1.9e+09	5.1e-02
Astatine				
At-204	9.2	m	2.9e+02	8.0e-09
At-205	26.2	m	5.9e+02	1.6e-08
At-206	30.6	m	2.7e+02	7.4e-09
At-207	1.80	h	3.3e+02	9.0e-09
At-208	1.63	h	2.2e+02	6.0e-09
At-209	5.41	h	3.0e+02	8.2e-09
At-210	8.1	h	2.2e+02	6.0e-09
At-211	7.214	h	2.8e+04	7.6e-07
At-215	1.00e-4	s	4.1e+06	1.1e-04
At-216	3.00e-4	s	3.6e+05	9.6e-06
At-217	3.23e-2	s	3.0e+06	8.2e-05
At-218	1.5	s	7.8e+06	2.1e-04
At-220	3.71	m	1.3e+03	3.5e-08
Radon				
Rn-207	9.25	m	7.0e+02	1.9e-08
Rn-209	28.5	m	5.7e+02	1.5e-08
Rn-210	2.4	h	1.2e+04	3.1e-07
Rn-211	14.6	h	3.6e+02	9.7e-09
Rn-212	23.9	m	2.0e+06	5.5e-05
Rn-218	3.5e-2	s	9.1e+05	2.5e-05
Rn-219	3.96	s	1.2e+04	3.3e-07

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Rn-220	55.6	s	1.1e+06	3.0e-05
Rn-222	3.8235	d	1.8e+06	4.8e-05
Rn-223	24.3	m	1.9e+03	5.0e-08
Francium				
Fr-212	20.0	m	5.9e+02	1.6e-08
Fr-219	2.0e-2	s	2.0e+05	5.4e-06
Fr-220	27.4	s	9.5e+04	2.6e-06
Fr-221	4.9	m	2.5e+04	6.9e-07
Fr-222	14.2	m	3.3e+03	8.8e-08
Fr-223	22.00	m	1.2e+04	3.1e-07
Fr-224	3.33	m	1.1e+03	3.0e-08
Fr-227	2.47	m	1.4e+03	3.9e-08
Radium				
Ra-219	0.01	s	4.3e+03	1.2e-07
Ra-220	1.79e-2	s	1.5e+05	4.1e-06
Ra-221	28	s	2.2e+04	5.9e-07
Ra-222	38.0	s	7.8e+04	2.1e-06
Ra-223	11.43	d	5.6e+03	1.5e-07
Ra-224	3.66	d	7.0e+04	1.9e-06
Ra-225	14.9	d	9.9e+04	2.7e-06
Ra-226	1600	y	1.0e+05	2.7e-06
Ra-227	42.2	m	4.4e+03	1.2e-07
Ra-228	5.75	y	9.3e+06	2.5e-04
Ra-230	93	m	8.8e+03	2.4e-07
Actinium				
Ac-223	2.10	m	4.4e+04	1.2e-06
Ac-224	2.78	h	3.4e+03	9.3e-08
Ac-225	10.0	d	5.7e+04	1.5e-06
Ac-226	29.37	h	5.1e+03	1.4e-07
Ac-227	21.772	y	7.0e+06	1.9e-04
Ac-228	6.15	h	7.6e+02	2.1e-08
Ac-230	122	s	1.1e+03	2.9e-08
Ac-231	7.5	m	1.6e+03	4.3e-08
Ac-232	119	s	5.3e+02	1.4e-08
Ac-233	145	s	1.2e+03	3.4e-08
Thorium				
Th-223	0.60	s	1.2e+04	3.2e-07
Th-224	1.05	s	3.2e+04	8.7e-07
Th-226	30.57	m	9.8e+04	2.7e-06
Th-227	18.68	d	6.1e+03	1.6e-07
Th-228	1.9116	y	4.0e+05	1.1e-05
Th-229	7.34e+3	y	9.8e+03	2.7e-07
Th-230	7.538e+4	y	2.3e+06	6.3e-05
Th-231	25.52	h	6.2e+04	1.7e-06
Th-232	1.405e10	y	4.6e+06	1.2e-04
Th-233	22.3	m	1.2e+04	3.3e-07
Th-234	24.10	d	9.6e+04	2.6e-06
Th-235	7.1	m	6.9e+03	1.9e-07

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Th-236	37.5	m	1.3e+04	3.6e-07
Protactinium				
Pa-227	38.3	m	4.7e+04	1.3e-06
Pa-228	22	h	5.0e+02	1.4e-08
Pa-229	1.50	d	1.4e+04	3.8e-07
Pa-230	17.4	d	1.0e+03	2.8e-08
Pa-231	3.276e+4	y	2.2e+04	5.9e-07
Pa-232	1.31	d	7.3e+02	2.0e-08
Pa-233	26.967	d	3.4e+03	9.1e-08
Pa-234	6.70	h	4.6e+02	1.3e-08
Pa-234m	1.17	m	9.0e+03	2.4e-07
Pa-235	24.5	m	2.3e+04	6.2e-07
Pa-236	9.1	m	6.9e+02	1.9e-08
Pa-237	8.7	m	1.1e+03	2.8e-08
Uranium				
U-227	1.1	m	6.6e+03	1.8e-07
U-228	9.1	m	2.0e+05	5.5e-06
U-230	20.8	d	7.4e+05	2.0e-05
U-231	4.2	d	1.2e+04	3.3e-07
U-232	68.9	y	3.1e+06	8.5e-05
U-233	1.592e+5	y	3.1e+06	8.3e-05
U-234	2.455e+5	y	5.4e+06	1.5e-04
U-235	7.04e+8	y	4.6e+03	1.2e-07
U-236	2.342e+7	y	8.8e+06	2.4e-04
U-237	6.75	d	6.0e+03	1.6e-07
U-238	4.468e+9	y	1.0e+07	2.8e-04
U-239	23.45	m	1.2e+04	3.2e-07
U-240	14.1	h	9.8e+04	2.6e-06
U-242	16.8	m	1.2e+04	3.2e-07
Neptunium				
Np-232	14.7	m	5.8e+02	1.6e-08
Np-233	36.2	m	9.4e+03	2.5e-07
Np-234	4.4	d	5.9e+02	1.6e-08
Np-235	396.1	d	1.1e+06	3.1e-05
Np-236	1.54e+5	y	5.7e+03	1.5e-07
Np-236m	22.5	h	1.6e+04	4.3e-07
Np-237	2.144e+6	y	3.9e+04	1.0e-06
Np-238	2.117	d	1.1e+03	3.0e-08
Np-239	2.3565	d	4.2e+03	1.1e-07
Np-240	61.9	m	6.5e+02	1.8e-08
Np-240m	7.22	m	1.9e+03	5.1e-08
Np-241	13.9	m	1.2e+04	3.2e-07
Np-242	2.2	m	2.0e+03	5.3e-08
Np-242m	5.5	m	7.2e+02	2.0e-08
Plutonium				
Pu-232	33.7	m	1.4e+04	3.7e-07
Pu-234	8.8	h	1.3e+04	3.4e-07
Pu-235	25.3	m	9.1e+03	2.5e-07

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Pu-236	2.858	y	7.8e+06	2.1e-04
Pu-237	45.2	d	1.8e+04	4.8e-07
Pu-238	87.7	y	1.0e+07	2.7e-04
Pu-239	2.411e+4	y	8.7e+06	2.4e-04
Pu-240	6564	y	1.0e+07	2.8e-04
Pu-241	14.35	y	2.8e+08	7.5e-03
Pu-242	3.75e+5	y	4.9e+06	1.3e-04
Pu-243	4.956	h	2.8e+04	7.5e-07
Pu-244	8.00e+7	y	3.1e+04	8.3e-07
Pu-245	10.5	h	1.7e+03	4.5e-08
Pu-246	10.84	d	5.8e+03	1.6e-07
Americium				
Am-237	73.0	m	2.0e+03	5.4e-08
Am-238	98	m	7.6e+02	2.1e-08
Am-239	11.9	h	3.4e+03	9.1e-08
Am-240	50.8	h	6.6e+02	1.8e-08
Am-241	432.2	y	5.8e+04	1.6e-06
Am-242	16.02	h	3.6e+04	9.8e-07
Am-242m	141	y	1.7e+06	4.7e-05
Am-243	7.37e+3	y	2.0e+04	5.3e-07
Am-244	10.1	h	8.6e+02	2.3e-08
Am-244m	26	m	1.5e+04	4.0e-07
Am-245	2.05	h	1.6e+04	4.4e-07
Am-246	39	m	9.3e+02	2.5e-08
Am-246m	25.0	m	6.6e+02	1.8e-08
Am-247	23.0	m	4.6e+03	1.2e-07
Curium				
Cm-238	2.4	h	1.0e+04	2.8e-07
Cm-239	2.9	h	3.0e+03	8.1e-08
Cm-240	27	d	7.7e+06	2.1e-04
Cm-241	32.8	d	1.5e+03	4.0e-08
Cm-242	162.8	d	9.0e+06	2.4e-04
Cm-243	29.1	y	5.9e+03	1.6e-07
Cm-244	18.10	y	8.5e+06	2.3e-04
Cm-245	8.5e+3	y	7.9e+03	2.1e-07
Cm-246	4.76e+3	y	1.7e+05	4.6e-06
Cm-247	1.56e+7	y	2.2e+03	6.1e-08
Cm-248	3.48e+5	y	4.7e+02	1.3e-08
Cm-249	64.15	m	2.1e+04	5.6e-07
Cm-250	8300	y	4.6e+01	1.2e-09
Cm-251	16.8	m	5.1e+03	1.4e-07
Berkelium				
Bk-245	4.94	d	3.4e+03	9.1e-08
Bk-246	1.80	d	8.1e+02	2.2e-08
Bk-247	1.38e+3	y	5.4e+03	1.5e-07
Bk-248m	23.7	h	1.2e+04	3.2e-07
Bk-249	330	d	1.7e+06	4.6e-05
Bk-250	3.212	h	7.3e+02	2.0e-08

Table 9. Derived concentration standards for members of the public for external exposure during submersion in a contaminated atmospheric cloud (cont'd)

Nuclide	Half-Life		Air submersion, DCS	
			(Bq/m ³)	(μ Ci/mL)
Bk-251	55.6	m	7.6e+03	2.1e-07
Californium				
Cf-244	19.4	m	8.5e+06	2.3e-04
Cf-246	35.7	h	7.0e+06	1.9e-04
Cf-247	3.11	h	8.8e+03	2.4e-07
Cf-248	334	d	1.6e+06	4.2e-05
Cf-249	351	y	2.2e+03	5.9e-08
Cf-250	13.08	y	6.3e+04	1.7e-06
Cf-251	900	y	6.5e+03	1.8e-07
Cf-252	2.645	y	1.4e+03	3.7e-08
Cf-253	17.81	d	3.1e+05	8.4e-06
Cf-254	60.5	d	3.6e+01	9.8e-10
Cf-255	85	m	6.5e+04	1.8e-06
Einsteinium				
Es-249	102.2	m	1.8e+03	4.8e-08
Es-250	8.6	h	5.9e+02	1.6e-08
Es-250m	2.22	h	1.2e+03	3.4e-08
Es-251	33	h	8.7e+03	2.4e-07
Es-253	20.47	d	2.1e+06	5.7e-05
Es-254	275.7	d	2.4e+05	6.4e-06
Es-254m	39.3	h	1.4e+03	3.9e-08
Es-255	39.8	d	2.4e+05	6.6e-06
Es-256	25.4	m	1.8e+04	4.9e-07
Fermium				
Fm-251	5.30	h	4.9e+03	1.3e-07
Fm-252	25.39	h	1.9e+06	5.1e-05
Fm-253	3.00	d	1.4e+04	3.7e-07
Fm-254	3.240	h	8.8e+04	2.4e-06
Fm-255	20.07	h	3.8e+05	1.0e-05
Fm-256	157.6	m	5.0e+01	1.3e-09
Fm-257	100.5	d	5.2e+03	1.4e-07

APPENDIX A: EFFECTIVE DOSE COEFFICIENTS FOR INGESTION, INHALATION, AND SUBMERSION

This appendix tabulates the age-specific effective dose coefficients used in the derivation of the DCS for ingestion of water, milk, or inhalation of air.

The dose coefficients were derived using the QCAL biokinetics and dosimetry code developed by the ORNL Center for Radiation Protection Knowledge (CRPK). QCAL is one of five software packages used in recent years in the production of ICRP publications of dose coefficients for ingestion or inhalation of radionuclides by workers or members of the public.

The nuclear decay data used in deriving the dose coefficients tabulated in this document are those of ICRP Publication 107 (ICRP 2008). These nuclear decay data are based on an updated version of the EDISTR (Dillman, 1980) code that was used to produce the previous set of ICRP nuclear decay data compiled in ICRP Publication 38 (ICRP 1983). Quality assurance and validation issues for the updated version of EDISTR are discussed in reports available through ORNL.

The last column of Tables A-1 through A-4 lists the per capita committed effective dose coefficient. The per capita effective dose coefficient, $E_{per\ capita}$, is representative of an aggregate of individuals in the U.S. population and is derived as

$$E_{per\ capita} = \frac{1}{\sum_i (f_i^M U_i^M + f_i^F U_i^F)} \sum_i (f_i^M U_i^M + f_i^F U_i^F) E_i \quad (7)$$

where, f_i^M , f_i^F , U_i^M , and U_i^F are as given in Tables 3 and 4 and E_i is the committed effective dose coefficient for the i^{th} reference age group tabulated in Tables A-1 through A-4.

Table A-1 contains committed effective dose coefficients for ingestion intakes of water or milk, for chemical forms of the radionuclide that will be considered in future Federal guidance. Table A-2 contains committed effective dose coefficients for inhalation intakes of particulate aerosols characterized by absorption Types F, M, and S, as defined by the ICRP (2015), and an activity median aerodynamic diameter (AMAD) of 1 micron. Table A-3 contains committed effective dose coefficients for inhalation of common gaseous or vapor forms of selected radionuclides. Table A-4 contains effective dose rate coefficients for external exposure for the case of submersion in a semi-infinite atmospheric cloud containing a uniformly distributed radionuclide.

The values in the tables in this Appendix are given to three significant figures. This level of precision is provided to minimize numerical errors as the tabulated values are converted to different units or used in further calculations. The result of any numerical calculations involving these values should be rounded, at the end of the computations, to the appropriate level of precisions and in most cases, that should be a single significant figure following conventional numerical rounding procedures.

Table A-1. Committed effective dose coefficients for ingested water and milk

	Dose Coefficient (Sv/Bq)						Per Capita	
Nuclide	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Hydrogen								
H-3 ^(a)	1.31e-10	7.21e-11	3.65e-11	2.73e-11	2.05e-11	1.95e-11	2.10e-11	3.08e-11
H-3 ^(b)	2.29e-10	1.53e-10	7.87e-11	5.86e-11	5.09e-11	5.18e-11	5.40e-11	7.03e-11
(a) Tritiated Water								
(b) Organic Bound Tritium								
Beryllium								
Be-7	8.99e-11	7.29e-11	4.16e-11	2.99e-11	2.10e-11	2.03e-11	2.16e-11	3.02e-11
Be-10	2.61e-09	1.29e-09	8.41e-10	6.71e-10	6.22e-10	4.21e-10	4.59e-10	6.63e-10
Carbon								
C-11 ^(a)	1.51e-10	1.16e-10	7.63e-11	5.65e-11	3.73e-11	2.75e-11	3.07e-11	4.75e-11
C-11 ^(b)	1.45e-10	1.12e-10	7.45e-11	5.52e-11	3.65e-11	2.67e-11	2.98e-11	4.61e-11
C-14 ^(a)	6.19e-10	4.66e-10	2.45e-10	1.76e-10	1.57e-10	1.59e-10	1.65e-10	2.12e-10
C-14 ^(b)	5.71e-11	4.71e-11	2.25e-11	1.45e-11	1.54e-11	1.31e-11	1.38e-11	1.88e-11
(a) Generic								
(b) Bicarbonate								
Fluorine								
F-18	2.87e-10	2.00e-10	1.27e-10	8.95e-11	6.07e-11	4.78e-11	5.30e-11	8.19e-11
Sodium								
Na-22	9.26e-09	6.39e-09	3.61e-09	2.81e-09	2.79e-09	3.49e-09	3.50e-09	3.85e-09
Na-24	3.16e-09	1.98e-09	1.17e-09	7.94e-10	5.56e-10	4.78e-10	5.25e-10	8.08e-10
Magnesium								
Mg-28	7.96e-09	4.82e-09	2.70e-09	1.77e-09	1.24e-09	1.00e-09	1.12e-09	1.84e-09
Aluminum								
Al-26	8.71e-09	4.67e-09	2.79e-09	1.99e-09	1.40e-09	1.35e-09	1.45e-09	2.12e-09
Silicon								
Si-31	6.34e-10	4.44e-10	2.90e-10	2.13e-10	1.42e-10	9.72e-11	1.10e-10	1.79e-10
Si-32	2.17e-08	7.77e-09	3.23e-09	1.52e-09	1.33e-09	7.08e-10	9.51e-10	2.54e-09
Phosphorus								
P-32	2.80e-08	1.26e-08	6.16e-09	3.55e-09	2.89e-09	1.73e-09	2.10e-09	4.39e-09
P-33	3.73e-09	1.91e-09	9.52e-10	5.20e-10	3.34e-10	2.66e-10	3.16e-10	6.35e-10
Sulfur								
S-35 ^(a)	2.31e-10	1.27e-10	5.78e-11	3.28e-11	2.02e-11	2.73e-11	2.94e-11	4.65e-11

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
S-35 ^(b)	1.12e-08	6.84e-09	3.55e-09	2.14e-09	1.30e-09	1.14e-09	1.30e-09	2.34e-09
S-38 ^(a)	2.41e-09	1.63e-09	1.02e-09	7.33e-10	4.87e-10	3.87e-10	4.29e-10	6.67e-10
S-38 ^(b)	2.45e-09	1.64e-09	1.02e-09	7.36e-10	4.88e-10	3.91e-10	4.33e-10	6.73e-10
(a) Inorganic Sulfur								
(b) Organic Sulfur								
Chlorine								
Cl-34m	6.95e-10	5.45e-10	3.64e-10	2.72e-10	1.82e-10	1.30e-10	1.45e-10	2.25e-10
Cl-36	1.09e-08	6.18e-09	3.24e-09	1.92e-09	1.18e-09	9.92e-10	1.15e-09	2.13e-09
Cl-38	7.90e-10	6.25e-10	4.17e-10	3.12e-10	2.11e-10	1.47e-10	1.65e-10	2.56e-10
Cl-39	5.97e-10	4.61e-10	3.04e-10	2.25e-10	1.50e-10	1.07e-10	1.20e-10	1.88e-10
Potassium								
K-40	1.20e-08	1.04e-08	6.92e-09	5.23e-09	3.71e-09	3.21e-09	3.44e-09	4.70e-09
K-42	3.41e-09	2.34e-09	1.35e-09	8.92e-10	5.91e-10	4.21e-10	4.84e-10	8.39e-10
K-43	1.83e-09	1.15e-09	6.12e-10	3.84e-10	2.56e-10	2.07e-10	2.35e-10	4.07e-10
K-44	5.45e-10	4.33e-10	2.89e-10	2.17e-10	1.46e-10	1.04e-10	1.16e-10	1.79e-10
K-45	3.23e-10	2.58e-10	1.72e-10	1.29e-10	8.58e-11	6.08e-11	6.81e-11	1.06e-10
Calcium								
Ca-41	1.02e-10	4.47e-11	2.20e-11	1.53e-11	1.27e-11	5.49e-12	7.06e-12	1.58e-11
Ca-45	7.98e-09	3.38e-09	1.33e-09	7.53e-10	7.26e-10	2.67e-10	3.76e-10	1.03e-09
Ca-47	7.96e-09	3.97e-09	2.02e-09	1.23e-09	9.56e-10	6.90e-10	7.96e-10	1.45e-09
Scandium								
Sc-43	7.13e-10	5.28e-10	3.32e-10	2.39e-10	1.62e-10	1.30e-10	1.43e-10	2.17e-10
Sc-44	1.24e-09	9.12e-10	5.67e-10	4.07e-10	2.77e-10	2.30e-10	2.52e-10	3.77e-10
Sc-44m	3.99e-09	3.08e-09	1.80e-09	1.27e-09	8.61e-10	8.22e-10	8.83e-10	1.26e-09
Sc-46	5.49e-09	2.84e-09	1.61e-09	1.15e-09	7.93e-10	7.58e-10	8.22e-10	1.24e-09
Sc-47	3.79e-10	2.72e-10	1.66e-10	1.20e-10	8.05e-11	6.61e-11	7.27e-11	1.11e-10
Sc-48	4.12e-09	3.31e-09	1.90e-09	1.35e-09	9.43e-10	8.90e-10	9.54e-10	1.35e-09
Sc-49	4.94e-10	3.98e-10	2.64e-10	1.98e-10	1.32e-10	8.89e-11	1.01e-10	1.60e-10
Titanium								
Ti-44	3.90e-08	6.97e-09	4.77e-09	3.92e-09	3.34e-09	3.20e-09	3.46e-09	5.33e-09
Ti-45	5.42e-10	4.04e-10	2.56e-10	1.85e-10	1.25e-10	9.88e-11	1.09e-10	1.66e-10
Vanadium								
V-47	3.98e-10	3.18e-10	2.11e-10	1.57e-10	1.05e-10	7.43e-11	8.32e-11	1.29e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
V-48	4.89e-09	3.96e-09	2.28e-09	1.63e-09	1.13e-09	1.08e-09	1.16e-09	1.63e-09
V-49	7.97e-12	2.39e-12	1.11e-12	6.26e-13	4.42e-13	3.10e-13	3.90e-13	9.24e-13
V-50	2.38e-09	1.84e-09	1.06e-09	7.56e-10	5.31e-10	5.23e-10	5.57e-10	7.74e-10
Chromium								
Cr-48	6.09e-10	4.37e-10	2.48e-10	1.78e-10	1.25e-10	1.22e-10	1.30e-10	1.84e-10
Cr-49	3.65e-10	2.86e-10	1.89e-10	1.41e-10	9.38e-11	6.81e-11	7.60e-11	1.17e-10
Cr-51	1.09e-10	4.81e-11	2.72e-11	1.95e-11	1.37e-11	1.32e-11	1.43e-11	2.20e-11
Manganese								
Mn-51	5.77e-10	4.54e-10	3.00e-10	2.24e-10	1.50e-10	1.06e-10	1.19e-10	1.85e-10
Mn-52	8.30e-09	4.39e-09	2.53e-09	1.80e-09	1.25e-09	1.23e-09	1.33e-09	1.95e-09
Mn-52m	4.46e-10	3.53e-10	2.35e-10	1.75e-10	1.17e-10	8.48e-11	9.46e-11	1.45e-10
Mn-53	2.28e-10	1.90e-11	9.94e-12	6.05e-12	3.80e-12	3.09e-12	4.58e-12	1.55e-11
Mn-54	7.82e-09	1.76e-09	1.03e-09	7.20e-10	5.06e-10	4.99e-10	5.60e-10	9.93e-10
Mn-56	1.11e-09	8.12e-10	5.19e-10	3.78e-10	2.55e-10	1.96e-10	2.17e-10	3.34e-10
Iron								
Fe-52	4.35e-09	2.68e-09	1.55e-09	1.08e-09	7.32e-10	6.30e-10	6.94e-10	1.08e-09
Fe-55	7.18e-09	1.81e-09	1.06e-09	7.28e-10	6.06e-10	2.93e-10	3.75e-10	8.55e-10
Fe-59	5.65e-08	1.19e-08	6.30e-09	4.57e-09	3.18e-09	1.71e-09	2.27e-09	5.76e-09
Fe-60	2.64e-07	7.37e-08	5.23e-08	4.89e-08	5.21e-08	2.57e-08	2.93e-08	4.70e-08
Cobalt								
Co-55	2.39e-09	1.84e-09	1.09e-09	7.72e-10	5.28e-10	4.86e-10	5.24e-10	7.56e-10
Co-56	2.38e-08	8.46e-09	5.10e-09	3.49e-09	2.48e-09	1.85e-09	2.13e-09	3.83e-09
Co-57	2.39e-09	6.69e-10	4.04e-10	2.78e-10	1.97e-10	1.22e-10	1.49e-10	3.12e-10
Co-58	6.98e-09	2.48e-09	1.48e-09	1.01e-09	7.14e-10	5.37e-10	6.18e-10	1.12e-09
Co-58m	4.93e-11	1.44e-11	8.21e-12	5.56e-12	3.83e-12	2.57e-12	3.11e-12	6.46e-12
Co-60	4.94e-08	1.47e-08	9.73e-09	6.80e-09	5.46e-09	3.25e-09	3.85e-09	7.29e-09
Co-60m	6.32e-13	3.69e-13	2.28e-13	1.68e-13	1.14e-13	8.46e-14	9.51e-14	1.54e-13
Co-61	3.63e-10	2.77e-10	1.83e-10	1.36e-10	9.04e-11	6.16e-11	6.97e-11	1.11e-10
Co-62m	3.15e-10	2.50e-10	1.67e-10	1.25e-10	8.30e-11	6.01e-11	6.71e-11	1.03e-10
Nickel								
Ni-56	3.08e-09	2.15e-09	1.23e-09	8.81e-10	6.16e-10	6.02e-10	6.44e-10	9.12e-10
Ni-57	2.01e-09	1.79e-09	1.04e-09	7.40e-10	5.14e-10	4.86e-10	5.20e-10	7.27e-10
Ni-59	6.49e-10	5.29e-11	3.15e-11	1.96e-11	1.28e-11	1.15e-11	1.57e-11	4.62e-11

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Ni-63	1.81e-09	1.32e-10	7.91e-11	4.79e-11	3.17e-11	2.99e-11	4.12e-11	1.25e-10
Ni-65	7.00e-10	5.13e-10	3.33e-10	2.45e-10	1.64e-10	1.19e-10	1.33e-10	2.09e-10
Ni-66	4.54e-09	2.80e-09	1.68e-09	1.16e-09	7.43e-10	6.45e-10	7.14e-10	1.13e-09
Copper								
Cu-60	4.59e-10	3.42e-10	2.28e-10	1.69e-10	1.12e-10	8.58e-11	9.50e-11	1.44e-10
Cu-61	5.72e-10	3.80e-10	2.39e-10	1.73e-10	1.16e-10	9.38e-11	1.04e-10	1.59e-10
Cu-64	4.54e-10	2.41e-10	1.43e-10	1.02e-10	6.83e-11	5.71e-11	6.34e-11	1.01e-10
Cu-67	1.79e-09	6.26e-10	3.54e-10	2.48e-10	1.63e-10	1.42e-10	1.61e-10	2.83e-10
Zinc								
Zn-62	3.53e-09	2.27e-09	1.37e-09	9.66e-10	6.44e-10	5.40e-10	5.96e-10	9.26e-10
Zn-63	5.29e-10	4.06e-10	2.69e-10	2.01e-10	1.34e-10	9.52e-11	1.07e-10	1.66e-10
Zn-65	5.18e-08	1.48e-08	9.45e-09	6.18e-09	4.63e-09	4.30e-09	4.76e-09	7.89e-09
Zn-69	1.85e-10	1.35e-10	8.96e-11	6.66e-11	4.44e-11	2.92e-11	3.33e-11	5.42e-11
Zn-69m	1.21e-09	6.07e-10	3.62e-10	2.51e-10	1.67e-10	1.45e-10	1.61e-10	2.58e-10
Zn-71m	1.10e-09	7.55e-10	4.74e-10	3.42e-10	2.30e-10	1.87e-10	2.06e-10	3.14e-10
Zn-72	9.88e-09	3.97e-09	2.21e-09	1.52e-09	1.02e-09	9.85e-10	1.09e-09	1.77e-09
Gallium								
Ga-65	2.32e-10	1.86e-10	1.24e-10	9.26e-11	6.17e-11	4.39e-11	4.91e-11	7.61e-11
Ga-66	3.28e-09	2.30e-09	1.34e-09	9.44e-10	6.40e-10	5.53e-10	6.06e-10	9.20e-10
Ga-67	2.54e-10	2.04e-10	1.13e-10	8.22e-11	5.67e-11	5.45e-11	5.83e-11	8.26e-11
Ga-68	5.75e-10	4.48e-10	2.95e-10	2.18e-10	1.46e-10	1.05e-10	1.17e-10	1.83e-10
Ga-70	2.04e-10	1.69e-10	1.12e-10	8.42e-11	5.63e-11	3.76e-11	4.25e-11	6.74e-11
Ga-72	2.73e-09	2.04e-09	1.20e-09	8.48e-10	5.84e-10	5.27e-10	5.70e-10	8.33e-10
Ga-73	6.36e-10	4.72e-10	3.00e-10	2.19e-10	1.46e-10	1.10e-10	1.23e-10	1.91e-10
Germanium								
Ge-66	6.95e-10	4.45e-10	2.61e-10	1.75e-10	1.19e-10	1.04e-10	1.14e-10	1.78e-10
Ge-67	4.00e-10	3.20e-10	2.13e-10	1.60e-10	1.07e-10	7.51e-11	8.42e-11	1.31e-10
Ge-68	6.61e-09	3.89e-09	2.24e-09	1.39e-09	8.97e-10	7.78e-10	8.74e-10	1.47e-09
Ge-69	1.09e-09	6.92e-10	4.27e-10	2.82e-10	1.94e-10	1.69e-10	1.85e-10	2.85e-10
Ge-71	5.23e-11	2.75e-11	1.42e-11	8.46e-12	5.12e-12	4.55e-12	5.24e-12	9.68e-12
Ge-75	3.14e-10	2.42e-10	1.58e-10	1.16e-10	7.70e-11	5.19e-11	5.89e-11	9.54e-11
Ge-77	1.96e-09	1.28e-09	7.80e-10	5.28e-10	3.51e-10	2.74e-10	3.08e-10	5.00e-10
Ge-78	7.81e-10	5.44e-10	3.44e-10	2.44e-10	1.63e-10	1.22e-10	1.37e-10	2.18e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Arsenic								
As-69	3.54e-10	2.84e-10	1.89e-10	1.41e-10	9.44e-11	6.62e-11	7.42e-11	1.16e-10
As-70	8.49e-10	6.13e-10	3.99e-10	2.96e-10	1.96e-10	1.52e-10	1.68e-10	2.57e-10
As-71	1.53e-09	9.06e-10	5.20e-10	3.46e-10	2.36e-10	2.08e-10	2.29e-10	3.62e-10
As-72	4.89e-09	3.12e-09	1.86e-09	1.25e-09	8.40e-10	6.98e-10	7.75e-10	1.23e-09
As-73	1.48e-09	7.96e-10	4.05e-10	2.42e-10	1.50e-10	1.29e-10	1.49e-10	2.76e-10
As-74	6.00e-09	3.56e-09	2.00e-09	1.29e-09	8.70e-10	7.65e-10	8.49e-10	1.38e-09
As-76	4.00e-09	2.59e-09	1.53e-09	1.02e-09	6.74e-10	5.37e-10	6.03e-10	9.90e-10
As-77	1.09e-09	6.44e-10	3.50e-10	2.22e-10	1.43e-10	1.10e-10	1.27e-10	2.29e-10
As-78	1.19e-09	8.95e-10	5.80e-10	4.28e-10	2.86e-10	2.07e-10	2.32e-10	3.63e-10
Selenium								
Se-70	6.43e-10	4.37e-10	2.78e-10	2.04e-10	1.35e-10	1.07e-10	1.18e-10	1.82e-10
Se-72	4.55e-08	2.41e-08	1.53e-08	1.09e-08	4.69e-09	3.70e-09	4.48e-09	8.88e-09
Se-73	1.46e-09	9.13e-10	5.70e-10	4.11e-10	2.32e-10	1.84e-10	2.10e-10	3.55e-10
Se-73m	1.85e-10	1.24e-10	7.91e-11	5.79e-11	3.53e-11	2.67e-11	3.02e-11	4.94e-11
Se-75	1.89e-08	1.05e-08	6.57e-09	4.56e-09	2.71e-09	2.50e-09	2.77e-09	4.40e-09
Se-79	3.01e-08	1.68e-08	1.04e-08	6.94e-09	2.64e-09	1.93e-09	2.48e-09	5.58e-09
Se-81	1.84e-10	1.46e-10	9.72e-11	7.27e-11	4.85e-11	3.25e-11	3.68e-11	5.86e-11
Se-81m	3.69e-10	2.49e-10	1.62e-10	1.19e-10	7.69e-11	5.24e-11	5.99e-11	9.93e-11
Se-83	2.75e-10	1.99e-10	1.31e-10	9.63e-11	6.32e-11	4.90e-11	5.43e-11	8.32e-11
Bromine								
Br-74	5.28e-10	4.06e-10	2.72e-10	2.02e-10	1.35e-10	1.01e-10	1.12e-10	1.70e-10
Br-74m	9.05e-10	6.87e-10	4.58e-10	3.40e-10	2.27e-10	1.69e-10	1.88e-10	2.87e-10
Br-75	5.68e-10	4.20e-10	2.73e-10	2.00e-10	1.33e-10	9.79e-11	1.09e-10	1.71e-10
Br-76	3.06e-09	1.96e-09	1.20e-09	8.03e-10	5.44e-10	4.55e-10	5.04e-10	7.90e-10
Br-77	5.69e-10	3.44e-10	2.06e-10	1.35e-10	9.43e-11	8.67e-11	9.45e-11	1.43e-10
Br-80	2.11e-10	1.73e-10	1.15e-10	8.60e-11	5.74e-11	3.87e-11	4.37e-11	6.92e-11
Br-80m	9.05e-10	6.19e-10	3.83e-10	2.68e-10	1.76e-10	1.27e-10	1.44e-10	2.39e-10
Br-82	3.27e-09	1.98e-09	1.19e-09	7.82e-10	5.42e-10	4.91e-10	5.37e-10	8.20e-10
Br-83	3.09e-10	2.28e-10	1.46e-10	1.05e-10	6.95e-11	4.70e-11	5.36e-11	8.84e-11
Br-84	5.92e-10	4.68e-10	3.12e-10	2.33e-10	1.57e-10	1.10e-10	1.23e-10	1.92e-10
Rubidium								
Rb-78	4.52e-10	3.56e-10	2.38e-10	1.78e-10	1.19e-10	8.75e-11	9.73e-11	1.48e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Rb-79	3.23e-10	2.56e-10	1.70e-10	1.27e-10	8.42e-11	6.01e-11	6.73e-11	1.05e-10
Rb-81	3.53e-10	2.36e-10	1.44e-10	1.00e-10	6.62e-11	5.21e-11	5.82e-11	9.31e-11
Rb-81m	3.98e-11	2.55e-11	1.51e-11	1.02e-11	6.73e-12	5.40e-12	6.05e-12	9.87e-12
Rb-82m	8.77e-10	5.52e-10	3.43e-10	2.32e-10	1.58e-10	1.47e-10	1.59e-10	2.36e-10
Rb-83	4.42e-09	3.38e-09	2.77e-09	2.20e-09	1.72e-09	1.65e-09	1.71e-09	2.06e-09
Rb-84	1.03e-08	7.50e-09	5.17e-09	3.62e-09	2.62e-09	2.36e-09	2.53e-09	3.49e-09
Rb-84m	3.47e-11	2.56e-11	1.71e-11	1.25e-11	8.30e-12	6.65e-12	7.31e-12	1.09e-11
Rb-86	1.51e-08	1.05e-08	5.91e-09	3.50e-09	2.21e-09	1.74e-09	2.00e-09	3.57e-09
Rb-87	4.55e-09	3.45e-09	2.24e-09	1.54e-09	9.92e-10	8.76e-10	9.57e-10	1.42e-09
Rb-88	5.94e-10	4.82e-10	3.23e-10	2.44e-10	1.65e-10	1.13e-10	1.27e-10	1.97e-10
Rb-89	2.96e-10	2.30e-10	1.53e-10	1.14e-10	7.65e-11	5.46e-11	6.11e-11	9.46e-11
Strontium								
Sr-80	2.06e-09	1.53e-09	9.86e-10	7.26e-10	4.90e-10	3.58e-10	4.00e-10	6.23e-10
Sr-81	4.04e-10	3.18e-10	2.11e-10	1.57e-10	1.05e-10	7.48e-11	8.37e-11	1.30e-10
Sr-82	6.52e-08	2.04e-08	9.67e-09	6.25e-09	6.29e-09	2.36e-09	3.18e-09	7.92e-09
Sr-83	1.60e-09	9.99e-10	5.71e-10	3.93e-10	2.79e-10	2.49e-10	2.71e-10	4.10e-10
Sr-85	7.46e-09	2.29e-09	1.26e-09	1.02e-09	9.75e-10	3.81e-10	4.85e-10	1.04e-09
Sr-85m	2.79e-11	1.69e-11	1.05e-11	7.55e-12	5.27e-12	4.98e-12	5.35e-12	7.65e-12
Sr-87m	1.28e-10	9.00e-11	5.60e-11	3.99e-11	2.71e-11	2.29e-11	2.51e-11	3.75e-11
Sr-89	4.30e-08	1.13e-08	4.64e-09	2.97e-09	3.45e-09	8.97e-10	1.40e-09	4.34e-09
Sr-90	3.84e-07	1.07e-07	5.44e-08	8.14e-08	1.33e-07	2.39e-08	3.25e-08	6.45e-08
Sr-91	2.33e-09	1.42e-09	8.21e-10	5.56e-10	3.91e-10	3.04e-10	3.41e-10	5.55e-10
Sr-92	1.17e-09	7.57e-10	4.45e-10	3.07e-10	2.07e-10	1.74e-10	1.92e-10	3.02e-10
Yttrium								
Y-84m	8.32e-10	6.34e-10	4.18e-10	3.09e-10	2.07e-10	1.57e-10	1.74e-10	2.64e-10
Y-85	7.39e-10	5.46e-10	3.46e-10	2.51e-10	1.70e-10	1.34e-10	1.48e-10	2.25e-10
Y-85m	1.20e-09	8.71e-10	5.40e-10	3.89e-10	2.63e-10	2.13e-10	2.35e-10	3.56e-10
Y-86	2.95e-09	2.26e-09	1.30e-09	9.21e-10	6.43e-10	6.04e-10	6.49e-10	9.27e-10
Y-86m	1.69e-10	1.29e-10	7.45e-11	5.27e-11	3.68e-11	3.47e-11	3.72e-11	5.31e-11
Y-87	1.23e-09	1.01e-09	5.71e-10	4.09e-10	2.80e-10	2.63e-10	2.83e-10	4.04e-10
Y-87m	4.68e-10	3.70e-10	2.16e-10	1.55e-10	1.05e-10	9.42e-11	1.02e-10	1.49e-10
Y-88	3.91e-09	3.30e-09	1.90e-09	1.36e-09	9.48e-10	9.10e-10	9.71e-10	1.36e-09
Y-90	3.50e-09	2.39e-09	1.47e-09	1.02e-09	6.52e-10	5.63e-10	6.21e-10	9.61e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Y-90m	3.20e-10	2.22e-10	1.33e-10	9.23e-11	6.16e-11	5.82e-11	6.29e-11	9.22e-11
Y-91	2.44e-09	1.65e-09	1.04e-09	7.26e-10	4.62e-10	3.99e-10	4.40e-10	6.76e-10
Y-91m	5.40e-11	3.76e-11	2.42e-11	1.72e-11	1.15e-11	1.08e-11	1.16e-11	1.66e-11
Y-92	1.86e-09	1.34e-09	8.49e-10	6.22e-10	4.15e-10	3.02e-10	3.39e-10	5.37e-10
Y-93	2.52e-09	1.73e-09	1.06e-09	7.59e-10	4.97e-10	3.89e-10	4.34e-10	6.88e-10
Y-94	5.58e-10	4.50e-10	3.00e-10	2.26e-10	1.52e-10	1.05e-10	1.18e-10	1.84e-10
Y-95	2.76e-10	2.24e-10	1.50e-10	1.13e-10	7.58e-11	5.26e-11	5.90e-11	9.16e-11
Zirconium								
Zr-86	2.14e-09	1.77e-09	9.99e-10	7.16e-10	4.92e-10	4.64e-10	4.98e-10	7.10e-10
Zr-87	8.43e-10	6.46e-10	4.18e-10	3.08e-10	2.07e-10	1.53e-10	1.70e-10	2.63e-10
Zr-88	2.70e-09	1.42e-09	8.57e-10	5.73e-10	4.29e-10	4.16e-10	4.47e-10	6.48e-10
Zr-89	1.93e-09	1.53e-09	8.82e-10	6.29e-10	4.32e-10	4.05e-10	4.35e-10	6.23e-10
Zr-93	8.91e-10	3.93e-10	2.78e-10	2.49e-10	2.46e-10	2.51e-10	2.55e-10	2.92e-10
Zr-95	3.06e-09	1.71e-09	9.49e-10	6.29e-10	4.59e-10	4.22e-10	4.60e-10	7.06e-10
Zr-97	3.61e-09	2.58e-09	1.56e-09	1.10e-09	7.34e-10	6.35e-10	6.95e-10	1.05e-09
Niobium								
Nb-88	4.45e-10	3.48e-10	2.33e-10	1.73e-10	1.16e-10	8.58e-11	9.53e-11	1.45e-10
Nb-89	1.24e-09	9.29e-10	5.96e-10	4.39e-10	2.95e-10	2.21e-10	2.46e-10	3.79e-10
Nb-89m	7.35e-10	5.62e-10	3.66e-10	2.69e-10	1.81e-10	1.37e-10	1.52e-10	2.32e-10
Nb-90	3.42e-09	2.60e-09	1.52e-09	1.08e-09	7.50e-10	6.96e-10	7.49e-10	1.07e-09
Nb-91	1.87e-10	1.30e-10	7.06e-11	5.24e-11	3.68e-11	3.24e-11	3.52e-11	5.23e-11
Nb-91m	3.48e-10	1.88e-10	9.71e-11	6.46e-11	4.18e-11	3.06e-11	3.57e-11	6.67e-11
Nb-92	4.22e-09	2.91e-09	1.90e-09	1.64e-09	1.69e-09	2.02e-09	2.01e-09	2.11e-09
Nb-92m	1.60e-09	1.31e-09	7.44e-10	5.33e-10	3.67e-10	3.49e-10	3.74e-10	5.30e-10
Nb-93m	1.69e-10	7.76e-11	4.31e-11	3.02e-11	2.82e-11	2.70e-11	2.85e-11	3.90e-11
Nb-94	5.55e-09	3.55e-09	2.31e-09	1.94e-09	1.99e-09	2.31e-09	2.31e-09	2.49e-09
Nb-95	1.43e-09	1.10e-09	6.29e-10	4.48e-10	3.13e-10	3.05e-10	3.26e-10	4.57e-10
Nb-95m	4.64e-10	3.32e-10	1.99e-10	1.43e-10	9.31e-11	7.30e-11	8.15e-11	1.29e-10
Nb-96	2.70e-09	2.11e-09	1.22e-09	8.66e-10	6.02e-10	5.62e-10	6.04e-10	8.63e-10
Nb-97	3.59e-10	2.79e-10	1.84e-10	1.36e-10	9.07e-11	6.56e-11	7.33e-11	1.14e-10
Nb-98m	6.19e-10	4.70e-10	3.09e-10	2.27e-10	1.52e-10	1.17e-10	1.29e-10	1.96e-10
Molybdenum								
Mo-90	1.60e-09	1.00e-09	5.86e-10	4.15e-10	2.84e-10	2.61e-10	2.83e-10	4.21e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Mo-91	4.10e-10	3.29e-10	2.19e-10	1.64e-10	1.10e-10	7.64e-11	8.58e-11	1.34e-10
Mo-93	1.65e-09	9.52e-10	5.13e-10	3.29e-10	2.09e-10	2.02e-10	2.23e-10	3.63e-10
Mo-93m	9.08e-10	5.81e-10	3.56e-10	2.56e-10	1.75e-10	1.70e-10	1.82e-10	2.59e-10
Mo-99	3.48e-09	2.01e-09	1.14e-09	7.72e-10	5.05e-10	4.39e-10	4.88e-10	7.92e-10
Mo-101	2.76e-10	2.04e-10	1.35e-10	9.98e-11	6.63e-11	4.73e-11	5.31e-11	8.35e-11
Mo-102	4.53e-10	3.72e-10	2.48e-10	1.87e-10	1.26e-10	8.53e-11	9.61e-11	1.51e-10
Technetium								
Tc-93	3.52e-10	2.25e-10	1.36e-10	9.36e-11	6.44e-11	6.22e-11	6.69e-11	9.70e-11
Tc-93m	1.82e-10	1.15e-10	7.21e-11	5.10e-11	3.45e-11	3.03e-11	3.31e-11	4.94e-11
Tc-94	9.22e-10	6.46e-10	3.78e-10	2.61e-10	1.82e-10	1.75e-10	1.88e-10	2.70e-10
Tc-94m	7.15e-10	4.63e-10	3.02e-10	2.22e-10	1.48e-10	1.11e-10	1.24e-10	1.95e-10
Tc-95	7.64e-10	5.76e-10	3.25e-10	2.27e-10	1.59e-10	1.49e-10	1.60e-10	2.32e-10
Tc-95m	2.77e-09	1.36e-09	7.63e-10	5.28e-10	3.67e-10	3.43e-10	3.75e-10	5.85e-10
Tc-96	4.71e-09	3.16e-09	1.81e-09	1.27e-09	8.91e-10	8.47e-10	9.11e-10	1.32e-09
Tc-96m	5.36e-11	3.00e-11	1.71e-11	1.18e-11	8.18e-12	7.77e-12	8.43e-12	1.27e-11
Tc-97	4.61e-10	1.76e-10	8.86e-11	5.86e-11	3.64e-11	2.76e-11	3.30e-11	6.74e-11
Tc-97m	3.48e-09	7.43e-10	3.34e-10	1.86e-10	1.23e-10	9.35e-11	1.23e-10	3.28e-10
Tc-98	9.99e-09	3.63e-09	2.00e-09	1.37e-09	1.05e-09	1.03e-09	1.12e-09	1.75e-09
Tc-99	3.99e-09	8.20e-10	3.73e-10	2.08e-10	1.43e-10	1.09e-10	1.42e-10	3.74e-10
Tc-99m	1.20e-10	5.42e-11	2.95e-11	1.97e-11	1.38e-11	1.26e-11	1.39e-11	2.28e-11
Tc-101	1.27e-10	9.45e-11	6.28e-11	4.67e-11	3.11e-11	2.14e-11	2.42e-11	3.84e-11
Tc-104	5.57e-10	4.20e-10	2.80e-10	2.10e-10	1.41e-10	9.99e-11	1.12e-10	1.74e-10
Ruthenium								
Ru-94	5.81e-10	3.19e-10	2.01e-10	1.43e-10	9.62e-11	7.76e-11	8.63e-11	1.37e-10
Ru-95	2.71e-10	1.95e-10	1.19e-10	8.39e-11	5.72e-11	5.30e-11	5.72e-11	8.24e-11
Ru-97	4.58e-10	3.65e-10	2.02e-10	1.46e-10	9.84e-11	9.04e-11	9.78e-11	1.43e-10
Ru-103	1.86e-09	1.03e-09	5.80e-10	3.99e-10	2.77e-10	2.63e-10	2.86e-10	4.34e-10
Ru-105	7.18e-10	5.24e-10	3.29e-10	2.37e-10	1.60e-10	1.26e-10	1.39e-10	2.13e-10
Ru-106	2.47e-08	1.20e-08	6.90e-09	4.31e-09	3.04e-09	2.57e-09	2.88e-09	4.86e-09
Rhodium								
Rh-97	2.88e-10	2.24e-10	1.48e-10	1.10e-10	7.30e-11	5.45e-11	6.06e-11	9.26e-11
Rh-97m	2.48e-10	1.79e-10	1.17e-10	8.45e-11	5.64e-11	4.86e-11	5.29e-11	7.73e-11
Rh-99	1.58e-09	1.07e-09	6.01e-10	4.24e-10	2.89e-10	2.72e-10	2.94e-10	4.35e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Rh-99m	2.54e-10	1.84e-10	1.07e-10	7.48e-11	5.18e-11	4.89e-11	5.26e-11	7.60e-11
Rh-100	2.29e-09	1.80e-09	1.03e-09	7.30e-10	5.13e-10	4.93e-10	5.27e-10	7.42e-10
Rh-101	2.41e-09	1.23e-09	7.58e-10	5.23e-10	3.89e-10	3.78e-10	4.05e-10	5.81e-10
Rh-101m	5.99e-10	4.65e-10	2.59e-10	1.86e-10	1.26e-10	1.17e-10	1.26e-10	1.84e-10
Rh-102	4.44e-09	2.24e-09	1.30e-09	8.65e-10	6.01e-10	5.36e-10	5.91e-10	9.43e-10
Rh-102m	1.24e-08	6.67e-09	4.27e-09	3.00e-09	2.31e-09	2.31e-09	2.44e-09	3.33e-09
Rh-103m	8.39e-13	4.49e-13	2.58e-13	1.63e-13	9.35e-14	9.20e-14	1.03e-13	1.74e-13
Rh-105	3.37e-10	2.20e-10	1.34e-10	9.45e-11	6.30e-11	4.89e-11	5.47e-11	8.76e-11
Rh-106m	7.08e-10	5.10e-10	3.20e-10	2.27e-10	1.55e-10	1.36e-10	1.48e-10	2.16e-10
Rh-107	1.45e-10	1.18e-10	7.85e-11	5.85e-11	3.90e-11	2.68e-11	3.02e-11	4.75e-11
Palladium								
Pd-98	3.97e-10	3.11e-10	2.07e-10	1.55e-10	1.04e-10	7.45e-11	8.32e-11	1.28e-10
Pd-99	2.03e-10	1.58e-10	1.04e-10	7.68e-11	5.12e-11	3.87e-11	4.29e-11	6.54e-11
Pd-100	2.15e-09	1.79e-09	1.02e-09	7.36e-10	5.01e-10	4.83e-10	5.17e-10	7.28e-10
Pd-101	3.06e-10	2.32e-10	1.30e-10	9.18e-11	6.21e-11	5.60e-11	6.09e-11	9.08e-11
Pd-103	2.38e-10	1.41e-10	7.41e-11	5.31e-11	3.19e-11	2.46e-11	2.83e-11	5.06e-11
Pd-107	6.34e-11	3.94e-12	2.15e-12	1.31e-12	8.76e-13	7.42e-13	1.13e-12	4.02e-12
Pd-109	6.50e-10	4.56e-10	2.91e-10	2.09e-10	1.35e-10	1.01e-10	1.14e-10	1.82e-10
Pd-111	2.98e-10	2.44e-10	1.62e-10	1.22e-10	8.14e-11	5.48e-11	6.19e-11	9.79e-11
Pd-112	3.82e-09	2.55e-09	1.38e-09	9.23e-10	5.91e-10	5.53e-10	6.08e-10	9.60e-10
Silver								
Ag-101	2.01e-10	1.61e-10	1.07e-10	7.98e-11	5.32e-11	3.84e-11	4.29e-11	6.60e-11
Ag-102	2.56e-10	1.99e-10	1.33e-10	9.90e-11	6.57e-11	4.98e-11	5.52e-11	8.35e-11
Ag-103	1.94e-10	1.44e-10	9.36e-11	6.81e-11	4.55e-11	3.65e-11	4.02e-11	6.03e-11
Ag-104	3.01e-10	2.06e-10	1.30e-10	9.14e-11	6.15e-11	6.03e-11	6.45e-11	9.11e-11
Ag-104m	4.13e-10	3.22e-10	2.13e-10	1.58e-10	1.06e-10	7.81e-11	8.69e-11	1.33e-10
Ag-105	2.35e-09	1.28e-09	7.32e-10	5.21e-10	3.58e-10	3.51e-10	3.79e-10	5.61e-10
Ag-106	2.03e-10	1.62e-10	1.08e-10	8.03e-11	5.35e-11	3.81e-11	4.26e-11	6.62e-11
Ag-106m	5.85e-09	4.07e-09	2.34e-09	1.67e-09	1.16e-09	1.14e-09	1.22e-09	1.73e-09
Ag-108m	1.21e-08	5.55e-09	3.27e-09	2.30e-09	1.61e-09	1.63e-09	1.75e-09	2.60e-09
Ag-110m	1.62e-08	7.69e-09	4.53e-09	3.19e-09	2.24e-09	2.27e-09	2.44e-09	3.59e-09
Ag-111	1.79e-09	9.49e-10	5.77e-10	3.97e-10	2.56e-10	2.11e-10	2.37e-10	3.91e-10
Ag-112	1.71e-09	1.24e-09	7.89e-10	5.78e-10	3.87e-10	2.85e-10	3.19e-10	5.01e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Ag-113	1.07e-09	7.81e-10	5.02e-10	3.66e-10	2.42e-10	1.77e-10	1.99e-10	3.14e-10
Ag-115	3.74e-10	2.94e-10	1.96e-10	1.47e-10	9.84e-11	6.75e-11	7.60e-11	1.20e-10
Cadmium								
Cd-104	4.50e-10	3.26e-10	2.09e-10	1.52e-10	1.02e-10	8.10e-11	8.94e-11	1.36e-10
Cd-105	2.22e-10	1.63e-10	1.06e-10	7.74e-11	5.16e-11	4.21e-11	4.62e-11	6.89e-11
Cd-107	9.37e-11	4.76e-11	2.57e-11	1.79e-11	1.13e-11	9.12e-12	1.04e-11	1.83e-11
Cd-109	4.80e-08	3.82e-09	2.37e-09	1.58e-09	1.09e-09	1.00e-09	1.30e-09	3.53e-09
Cd-111m	4.44e-11	3.17e-11	2.07e-11	1.50e-11	9.95e-12	7.40e-12	8.27e-12	1.30e-11
Cd-113	2.35e-07	2.16e-08	1.71e-08	1.42e-08	1.26e-08	1.18e-08	1.32e-08	2.34e-08
Cd-113m	2.72e-07	2.41e-08	1.75e-08	1.35e-08	1.15e-08	1.10e-08	1.26e-08	2.47e-08
Cd-115	3.61e-09	1.14e-09	6.94e-10	4.88e-10	3.19e-10	2.69e-10	3.07e-10	5.48e-10
Cd-115m	4.56e-08	4.27e-09	2.57e-09	1.73e-09	1.11e-09	9.95e-10	1.30e-09	3.49e-09
Cd-117	8.72e-10	6.06e-10	3.83e-10	2.76e-10	1.86e-10	1.46e-10	1.62e-10	2.49e-10
Cd-117m	8.94e-10	6.35e-10	3.88e-10	2.74e-10	1.89e-10	1.66e-10	1.80e-10	2.65e-10
Cd-118	1.16e-09	9.09e-10	6.00e-10	4.50e-10	3.03e-10	2.07e-10	2.33e-10	3.68e-10
Indium								
In-107	2.16e-10	1.62e-10	1.07e-10	7.87e-11	5.23e-11	4.08e-11	4.51e-11	6.81e-11
In-108	3.93e-10	2.71e-10	1.74e-10	1.23e-10	8.22e-11	7.87e-11	8.45e-11	1.20e-10
In-108m	4.84e-10	3.69e-10	2.43e-10	1.80e-10	1.20e-10	9.24e-11	1.02e-10	1.54e-10
In-109	2.34e-10	1.61e-10	9.41e-11	6.56e-11	4.56e-11	4.35e-11	4.68e-11	6.75e-11
In-110	1.03e-09	7.42e-10	4.28e-10	2.96e-10	2.09e-10	2.08e-10	2.22e-10	3.12e-10
In-110m	5.69e-10	4.33e-10	2.83e-10	2.08e-10	1.39e-10	1.06e-10	1.17e-10	1.79e-10
In-111	7.32e-10	5.72e-10	3.20e-10	2.31e-10	1.59e-10	1.50e-10	1.61e-10	2.31e-10
In-112	6.16e-11	4.98e-11	3.32e-11	2.47e-11	1.64e-11	1.14e-11	1.28e-11	2.01e-11
In-112m	7.73e-11	6.08e-11	4.04e-11	3.00e-11	1.99e-11	1.32e-11	1.50e-11	2.42e-11
In-113m	1.30e-10	9.82e-11	6.37e-11	4.64e-11	3.10e-11	2.32e-11	2.58e-11	4.00e-11
In-114m	1.04e-08	2.85e-09	1.72e-09	1.18e-09	7.48e-10	6.61e-10	7.61e-10	1.42e-09
In-115	1.91e-08	1.72e-09	1.08e-09	7.44e-10	6.04e-10	5.74e-10	6.92e-10	1.57e-09
In-115m	2.25e-10	1.66e-10	1.05e-10	7.65e-11	5.09e-11	3.67e-11	4.13e-11	6.58e-11
In-116m	3.21e-10	2.34e-10	1.53e-10	1.10e-10	7.36e-11	6.21e-11	6.78e-11	1.00e-10
In-117	1.47e-10	1.12e-10	7.43e-11	5.45e-11	3.63e-11	2.71e-11	3.01e-11	4.63e-11
In-117m	4.53e-10	3.47e-10	2.26e-10	1.66e-10	1.11e-10	7.90e-11	8.87e-11	1.40e-10
In-119m	3.05e-10	2.52e-10	1.67e-10	1.26e-10	8.43e-11	5.68e-11	6.41e-11	1.01e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Tin								
Sn-108	1.26e-10	9.28e-11	6.09e-11	4.47e-11	2.99e-11	2.39e-11	2.63e-11	3.93e-11
Sn-109	9.60e-11	6.55e-11	4.27e-11	3.05e-11	2.01e-11	1.94e-11	2.08e-11	2.94e-11
Sn-110	1.02e-09	7.15e-10	4.24e-10	2.98e-10	2.04e-10	1.79e-10	1.95e-10	2.92e-10
Sn-111	1.18e-10	9.09e-11	5.96e-11	4.40e-11	2.93e-11	2.20e-11	2.44e-11	3.74e-11
Sn-113	7.07e-09	1.12e-09	6.13e-10	4.07e-10	2.74e-10	2.38e-10	2.91e-10	6.66e-10
Sn-113m	3.22e-12	1.51e-12	9.56e-13	6.29e-13	3.66e-13	3.68e-13	4.07e-13	6.57e-13
Sn-117m	1.56e-09	4.17e-10	2.29e-10	1.61e-10	1.09e-10	9.34e-11	1.08e-10	2.04e-10
Sn-119m	3.16e-09	3.07e-10	1.60e-10	9.78e-11	6.25e-11	5.27e-11	7.39e-11	2.28e-10
Sn-121	1.56e-10	6.20e-11	3.98e-11	2.86e-11	1.88e-11	1.14e-11	1.37e-11	2.65e-11
Sn-121m	9.82e-09	7.80e-10	4.00e-10	2.29e-10	1.57e-10	1.24e-10	1.87e-10	6.51e-10
Sn-123	1.78e-08	2.42e-09	1.36e-09	8.59e-10	5.75e-10	4.60e-10	5.93e-10	1.52e-09
Sn-123m	2.23e-10	1.80e-10	1.20e-10	8.94e-11	5.97e-11	4.02e-11	4.55e-11	7.21e-11
Sn-125	6.76e-09	2.92e-09	1.74e-09	1.19e-09	7.76e-10	6.87e-10	7.68e-10	1.28e-09
Sn-126	9.75e-08	1.12e-08	6.39e-09	4.10e-09	2.97e-09	2.61e-09	3.28e-09	8.07e-09
Sn-127	7.86e-10	5.56e-10	3.51e-10	2.52e-10	1.71e-10	1.38e-10	1.52e-10	2.31e-10
Sn-128	7.99e-10	5.99e-10	3.91e-10	2.87e-10	1.92e-10	1.45e-10	1.61e-10	2.47e-10
Antimony								
Sb-115	1.43e-10	1.09e-10	7.22e-11	5.31e-11	3.53e-11	2.72e-11	3.01e-11	4.56e-11
Sb-116	1.88e-10	1.46e-10	9.70e-11	7.20e-11	4.77e-11	3.64e-11	4.03e-11	6.10e-11
Sb-116m	3.02e-10	2.06e-10	1.32e-10	9.24e-11	6.18e-11	6.06e-11	6.49e-11	9.16e-11
Sb-117	6.17e-11	4.36e-11	2.58e-11	1.80e-11	1.21e-11	1.12e-11	1.21e-11	1.79e-11
Sb-118m	8.37e-10	6.18e-10	3.58e-10	2.48e-10	1.74e-10	1.71e-10	1.83e-10	2.58e-10
Sb-119	1.72e-10	1.21e-10	6.34e-11	4.30e-11	2.71e-11	2.25e-11	2.53e-11	4.25e-11
Sb-120	9.22e-11	7.41e-11	4.93e-11	3.67e-11	2.44e-11	1.74e-11	1.95e-11	3.02e-11
Sb-120m	4.30e-09	3.21e-09	1.84e-09	1.29e-09	9.01e-10	8.56e-10	9.19e-10	1.32e-09
Sb-122	3.45e-09	2.12e-09	1.26e-09	8.42e-10	5.53e-10	4.71e-10	5.24e-10	8.39e-10
Sb-124	1.20e-08	6.06e-09	3.51e-09	2.23e-09	1.53e-09	1.36e-09	1.51e-09	2.48e-09
Sb-124n	4.57e-11	3.46e-11	2.30e-11	1.69e-11	1.12e-11	8.62e-12	9.54e-12	1.45e-11
Sb-125	5.73e-09	2.51e-09	1.44e-09	8.84e-10	6.14e-10	5.46e-10	6.12e-10	1.04e-09
Sb-126	9.34e-09	5.75e-09	3.32e-09	2.22e-09	1.53e-09	1.40e-09	1.53e-09	2.34e-09
Sb-126m	2.36e-10	1.86e-10	1.24e-10	9.21e-11	6.12e-11	4.49e-11	5.00e-11	7.68e-11
Sb-127	3.76e-09	2.12e-09	1.22e-09	7.85e-10	5.24e-10	4.50e-10	5.03e-10	8.29e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Sb-128	2.40e-09	1.79e-09	1.06e-09	7.46e-10	5.14e-10	4.61e-10	4.99e-10	7.31e-10
Sb-128m	2.14e-10	1.72e-10	1.14e-10	8.52e-11	5.67e-11	4.10e-11	4.58e-11	7.05e-11
Sb-129	1.21e-09	8.40e-10	5.20e-10	3.69e-10	2.48e-10	2.03e-10	2.24e-10	3.43e-10
Sb-130	5.41e-10	4.09e-10	2.70e-10	1.98e-10	1.32e-10	1.03e-10	1.14e-10	1.72e-10
Sb-131	6.40e-10	5.35e-10	3.44e-10	2.22e-10	1.49e-10	1.07e-10	1.21e-10	1.98e-10
Tellurium								
Te-114	4.09e-10	3.19e-10	2.13e-10	1.59e-10	1.06e-10	7.86e-11	8.73e-11	1.33e-10
Te-116	8.43e-10	5.89e-10	3.64e-10	2.59e-10	1.76e-10	1.48e-10	1.62e-10	2.44e-10
Te-117	2.83e-10	2.02e-10	1.30e-10	9.37e-11	6.27e-11	5.27e-11	5.76e-11	8.57e-11
Te-118	1.06e-08	5.48e-09	3.09e-09	1.98e-09	1.33e-09	1.15e-09	1.29e-09	2.16e-09
Te-119	7.32e-10	5.11e-10	2.86e-10	2.03e-10	1.41e-10	1.33e-10	1.43e-10	2.09e-10
Te-119m	3.36e-09	1.99e-09	1.12e-09	7.96e-10	5.55e-10	5.30e-10	5.72e-10	8.46e-10
Te-121	2.45e-09	1.22e-09	6.87e-10	4.82e-10	3.37e-10	3.25e-10	3.53e-10	5.35e-10
Te-121m	6.43e-09	2.25e-09	1.16e-09	6.87e-10	4.98e-10	4.29e-10	4.94e-10	9.31e-10
Te-123	1.58e-10	4.85e-11	2.24e-11	1.09e-11	8.14e-12	5.28e-12	6.90e-12	1.77e-11
Te-123m	5.07e-09	1.75e-09	8.57e-10	4.70e-10	3.34e-10	2.61e-10	3.14e-10	6.68e-10
Te-125m	4.36e-09	1.49e-09	7.19e-10	3.78e-10	2.59e-10	1.91e-10	2.38e-10	5.47e-10
Te-127	4.53e-10	2.38e-10	1.46e-10	1.01e-10	6.59e-11	4.65e-11	5.37e-11	9.47e-11
Te-127m	1.17e-08	3.95e-09	1.88e-09	9.38e-10	6.70e-10	4.49e-10	5.76e-10	1.41e-09
Te-129	3.59e-10	2.74e-10	1.81e-10	1.35e-10	8.96e-11	6.07e-11	6.87e-11	1.10e-10
Te-129m	1.59e-08	6.01e-09	3.12e-09	1.72e-09	1.18e-09	8.90e-10	1.07e-09	2.25e-09
Te-131	5.24e-10	4.67e-10	2.97e-10	1.80e-10	1.22e-10	8.31e-11	9.55e-11	1.63e-10
Te-131m	1.02e-08	6.28e-09	3.77e-09	2.02e-09	1.38e-09	1.06e-09	1.22e-09	2.21e-09
Te-132	2.26e-08	1.19e-08	6.63e-09	3.61e-09	2.46e-09	1.90e-09	2.22e-09	4.20e-09
Te-133	4.83e-10	4.12e-10	2.42e-10	1.37e-10	9.20e-11	6.32e-11	7.37e-11	1.33e-10
Te-133m	1.70e-09	1.40e-09	7.98e-10	4.21e-10	2.83e-10	2.00e-10	2.35e-10	4.37e-10
Te-134	6.52e-10	4.97e-10	3.00e-10	1.92e-10	1.29e-10	9.73e-11	1.10e-10	1.81e-10
Iodine								
I-118	5.41e-10	4.33e-10	2.86e-10	2.11e-10	1.43e-10	1.01e-10	1.13e-10	1.76e-10
I-119	2.19e-10	1.74e-10	1.12e-10	8.12e-11	5.42e-11	3.93e-11	4.40e-11	6.90e-11
I-120	1.83e-09	1.50e-09	9.29e-10	6.07e-10	4.15e-10	3.00e-10	3.39e-10	5.52e-10
I-120m	1.07e-09	8.49e-10	5.36e-10	3.64e-10	2.45e-10	1.82e-10	2.04e-10	3.25e-10
I-121	3.46e-10	2.77e-10	1.57e-10	8.73e-11	5.92e-11	4.44e-11	5.11e-11	9.04e-11

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
I-123	1.79e-09	1.55e-09	8.27e-10	3.85e-10	2.63e-10	1.82e-10	2.19e-10	4.39e-10
I-124	6.11e-08	5.85e-08	3.58e-08	1.77e-08	1.25e-08	8.58e-09	1.00e-08	1.82e-08
I-125	3.70e-08	4.34e-08	3.59e-08	2.12e-08	1.64e-08	1.26e-08	1.37e-08	1.91e-08
I-126	1.28e-07	1.32e-07	8.75e-08	4.37e-08	3.07e-08	2.12e-08	2.45e-08	4.29e-08
I-128	3.34e-10	2.76e-10	1.77e-10	1.26e-10	8.44e-11	5.68e-11	6.46e-11	1.05e-10
I-129	1.29e-07	1.62e-07	1.64e-07	1.17e-07	1.02e-07	9.39e-08	9.66e-08	1.09e-07
I-130	1.40e-08	1.21e-08	6.60e-09	3.15e-09	2.16e-09	1.50e-09	1.79e-09	3.51e-09
I-131	1.23e-07	1.21e-07	7.39e-08	3.51e-08	2.41e-08	1.63e-08	1.93e-08	3.63e-08
I-132	2.17e-09	1.78e-09	1.03e-09	5.76e-10	3.90e-10	2.81e-10	3.25e-10	5.80e-10
I-132m	1.69e-09	1.41e-09	7.85e-10	4.05e-10	2.75e-10	1.94e-10	2.28e-10	4.30e-10
I-133	3.16e-08	2.78e-08	1.52e-08	7.03e-09	4.74e-09	3.15e-09	3.82e-09	7.82e-09
I-134	7.50e-10	5.88e-10	3.63e-10	2.38e-10	1.59e-10	1.19e-10	1.34e-10	2.18e-10
I-135	7.13e-09	6.09e-09	3.34e-09	1.63e-09	1.10e-09	7.57e-10	9.04e-10	1.78e-09
Cesium								
Cs-125	2.65e-10	2.00e-10	1.28e-10	9.36e-11	6.23e-11	4.62e-11	5.16e-11	8.05e-11
Cs-127	2.25e-10	1.41e-10	8.06e-11	5.35e-11	3.70e-11	3.59e-11	3.88e-11	5.79e-11
Cs-129	5.19e-10	3.23e-10	1.78e-10	1.10e-10	7.86e-11	7.57e-11	8.24e-11	1.27e-10
Cs-130	1.97e-10	1.54e-10	9.99e-11	7.38e-11	4.91e-11	3.51e-11	3.94e-11	6.18e-11
Cs-131	4.76e-10	2.90e-10	1.50e-10	8.39e-11	5.86e-11	5.23e-11	5.88e-11	1.01e-10
Cs-132	2.83e-09	1.88e-09	1.19e-09	7.58e-10	5.58e-10	5.08e-10	5.49e-10	8.02e-10
Cs-134	2.63e-08	1.87e-08	1.55e-08	1.22e-08	1.30e-08	1.39e-08	1.39e-08	1.47e-08
Cs-134m	1.46e-10	8.53e-11	4.04e-11	2.50e-11	1.80e-11	1.46e-11	1.66e-11	2.94e-11
Cs-135	5.88e-09	3.67e-09	1.95e-09	1.19e-09	1.14e-09	1.27e-09	1.31e-09	1.70e-09
Cs-135m	1.36e-10	8.85e-11	5.74e-11	4.11e-11	2.69e-11	2.66e-11	2.85e-11	4.02e-11
Cs-136	1.49e-08	9.83e-09	6.20e-09	3.97e-09	3.02e-09	2.73e-09	2.94e-09	4.25e-09
Cs-137	2.60e-08	1.72e-08	1.26e-08	1.04e-08	1.13e-08	1.36e-08	1.35e-08	1.38e-08
Cs-138	7.10e-10	5.52e-10	3.60e-10	2.66e-10	1.78e-10	1.29e-10	1.44e-10	2.24e-10
Barium								
Ba-124	4.41e-10	3.58e-10	2.40e-10	1.80e-10	1.22e-10	8.49e-11	9.51e-11	1.47e-10
Ba-126	1.38e-09	1.03e-09	6.60e-10	4.83e-10	3.25e-10	2.43e-10	2.71e-10	4.19e-10
Ba-127	1.55e-10	1.23e-10	8.08e-11	6.00e-11	4.00e-11	2.85e-11	3.19e-11	4.98e-11
Ba-128	7.93e-09	4.16e-09	2.29e-09	1.52e-09	1.07e-09	8.86e-10	9.91e-10	1.65e-09
Ba-129	2.11e-10	1.51e-10	9.13e-11	6.40e-11	4.32e-11	3.52e-11	3.89e-11	6.01e-11

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Ba-129m	2.89e-10	2.06e-10	1.21e-10	8.21e-11	5.63e-11	5.80e-11	6.18e-11	8.71e-11
Ba-131	2.56e-09	9.92e-10	5.33e-10	3.87e-10	3.03e-10	2.22e-10	2.52e-10	4.36e-10
Ba-131m	5.52e-12	2.96e-12	1.85e-12	1.34e-12	9.02e-13	8.18e-13	8.91e-13	1.34e-12
Ba-133	1.63e-08	3.44e-09	2.19e-09	2.97e-09	5.76e-09	1.00e-09	1.35e-09	2.60e-09
Ba-133m	9.55e-10	3.95e-10	2.18e-10	1.49e-10	1.11e-10	6.98e-11	8.27e-11	1.58e-10
Ba-135m	7.13e-10	3.23e-10	1.82e-10	1.25e-10	8.97e-11	5.91e-11	6.92e-11	1.28e-10
Ba-139	6.88e-10	5.29e-10	3.48e-10	2.60e-10	1.74e-10	1.18e-10	1.33e-10	2.13e-10
Ba-140	2.37e-08	5.07e-09	2.41e-09	1.72e-09	1.70e-09	7.15e-10	9.55e-10	2.42e-09
Ba-141	3.83e-10	3.01e-10	1.99e-10	1.48e-10	9.88e-11	6.93e-11	7.78e-11	1.22e-10
Ba-142	1.79e-10	1.37e-10	8.95e-11	6.58e-11	4.40e-11	3.31e-11	3.68e-11	5.64e-11
Lanthanum								
La-129	1.59e-10	1.27e-10	8.35e-11	6.21e-11	4.14e-11	3.00e-11	3.35e-11	5.17e-11
La-131	1.72e-10	1.26e-10	8.19e-11	5.99e-11	4.01e-11	3.16e-11	3.49e-11	5.28e-11
La-132	1.41e-09	1.01e-09	6.16e-10	4.40e-10	3.00e-10	2.53e-10	2.77e-10	4.15e-10
La-132m	1.26e-10	8.95e-11	5.54e-11	3.96e-11	2.67e-11	2.32e-11	2.53e-11	3.74e-11
La-133	9.43e-11	6.84e-11	4.11e-11	2.91e-11	1.98e-11	1.70e-11	1.86e-11	2.78e-11
La-135	8.67e-11	6.91e-11	3.67e-11	2.58e-11	1.71e-11	1.59e-11	1.73e-11	2.59e-11
La-137	6.47e-10	1.64e-10	9.53e-11	7.10e-11	5.27e-11	5.07e-11	5.59e-11	9.22e-11
La-138	1.16e-08	2.44e-09	1.58e-09	1.24e-09	1.01e-09	9.89e-10	1.07e-09	1.66e-09
La-140	3.86e-09	2.98e-09	1.77e-09	1.25e-09	8.52e-10	7.88e-10	8.50e-10	1.22e-09
La-141	1.22e-09	8.96e-10	5.78e-10	4.26e-10	2.82e-10	2.02e-10	2.27e-10	3.61e-10
La-142	8.91e-10	6.69e-10	4.34e-10	3.18e-10	2.14e-10	1.64e-10	1.82e-10	2.77e-10
La-143	3.27e-10	2.68e-10	1.79e-10	1.34e-10	9.00e-11	6.14e-11	6.91e-11	1.08e-10
Cerium								
Ce-130	4.36e-10	3.35e-10	2.22e-10	1.65e-10	1.11e-10	8.20e-11	9.12e-11	1.39e-10
Ce-131	1.61e-10	1.26e-10	8.33e-11	6.19e-11	4.12e-11	3.07e-11	3.41e-11	5.21e-11
Ce-132	8.17e-10	5.75e-10	3.24e-10	2.26e-10	1.56e-10	1.44e-10	1.56e-10	2.31e-10
Ce-133	3.64e-10	2.76e-10	1.77e-10	1.30e-10	8.70e-11	6.63e-11	7.36e-11	1.13e-10
Ce-133m	7.02e-10	5.11e-10	2.96e-10	2.06e-10	1.45e-10	1.39e-10	1.49e-10	2.13e-10
Ce-134	4.23e-09	3.02e-09	1.77e-09	1.23e-09	8.07e-10	7.36e-10	8.02e-10	1.21e-09
Ce-135	8.09e-10	6.42e-10	3.60e-10	2.56e-10	1.78e-10	1.71e-10	1.83e-10	2.60e-10
Ce-137	5.36e-11	4.04e-11	2.16e-11	1.50e-11	1.00e-11	9.45e-12	1.03e-11	1.54e-11
Ce-137m	3.99e-10	3.12e-10	1.86e-10	1.34e-10	8.87e-11	6.97e-11	7.74e-11	1.20e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Ce-139	6.58e-10	3.36e-10	1.85e-10	1.33e-10	9.09e-11	8.84e-11	9.59e-11	1.46e-10
Ce-141	5.06e-10	2.65e-10	1.59e-10	1.14e-10	7.64e-11	6.26e-11	6.97e-11	1.12e-10
Ce-143	1.38e-09	9.95e-10	6.13e-10	4.35e-10	2.85e-10	2.42e-10	2.66e-10	4.04e-10
Ce-144	1.13e-08	4.39e-09	2.51e-09	1.67e-09	1.08e-09	9.79e-10	1.10e-09	1.91e-09
Praseodymium								
Pr-134	2.78e-10	2.18e-10	1.45e-10	1.08e-10	7.20e-11	5.36e-11	5.95e-11	9.07e-11
Pr-134m	4.96e-10	3.93e-10	2.61e-10	1.95e-10	1.31e-10	9.44e-11	1.05e-10	1.62e-10
Pr-135	2.50e-10	1.99e-10	1.30e-10	9.71e-11	6.49e-11	4.75e-11	5.29e-11	8.13e-11
Pr-136	2.15e-10	1.70e-10	1.13e-10	8.46e-11	5.63e-11	4.15e-11	4.62e-11	7.05e-11
Pr-137	1.81e-10	1.38e-10	8.97e-11	6.59e-11	4.41e-11	3.32e-11	3.69e-11	5.66e-11
Pr-138m	5.67e-10	4.05e-10	2.52e-10	1.78e-10	1.21e-10	1.10e-10	1.19e-10	1.72e-10
Pr-139	1.02e-10	7.47e-11	4.53e-11	3.23e-11	2.18e-11	1.83e-11	2.01e-11	3.03e-11
Pr-142	2.12e-09	1.46e-09	9.08e-10	6.43e-10	4.16e-10	3.38e-10	3.75e-10	5.87e-10
Pr-142m	2.48e-11	1.67e-11	1.03e-11	7.23e-12	4.65e-12	3.88e-12	4.30e-12	6.72e-12
Pr-143	9.52e-10	5.98e-10	3.85e-10	2.71e-10	1.72e-10	1.40e-10	1.56e-10	2.47e-10
Pr-144	3.40e-10	2.81e-10	1.87e-10	1.41e-10	9.44e-11	6.35e-11	7.17e-11	1.13e-10
Pr-145	9.53e-10	6.96e-10	4.49e-10	3.28e-10	2.16e-10	1.57e-10	1.76e-10	2.80e-10
Pr-146	5.08e-10	4.07e-10	2.71e-10	2.03e-10	1.37e-10	9.50e-11	1.07e-10	1.66e-10
Pr-147	2.03e-10	1.67e-10	1.11e-10	8.30e-11	5.54e-11	3.81e-11	4.29e-11	6.72e-11
Neodymium								
Nd-135	3.49e-10	2.79e-10	1.85e-10	1.38e-10	9.24e-11	6.62e-11	7.40e-11	1.14e-10
Nd-136	5.32e-10	3.95e-10	2.57e-10	1.88e-10	1.27e-10	9.85e-11	1.09e-10	1.65e-10
Nd-137	2.74e-10	2.07e-10	1.35e-10	9.91e-11	6.61e-11	5.15e-11	5.69e-11	8.62e-11
Nd-138	2.03e-09	1.44e-09	8.84e-10	6.39e-10	4.27e-10	3.32e-10	3.69e-10	5.77e-10
Nd-139	1.14e-10	8.92e-11	5.86e-11	4.33e-11	2.89e-11	2.15e-11	2.39e-11	3.66e-11
Nd-139m	7.46e-10	5.45e-10	3.14e-10	2.20e-10	1.54e-10	1.47e-10	1.58e-10	2.26e-10
Nd-140	3.09e-09	2.23e-09	1.32e-09	9.27e-10	6.07e-10	5.53e-10	6.02e-10	8.99e-10
Nd-141	3.12e-11	2.22e-11	1.33e-11	9.29e-12	6.22e-12	5.65e-12	6.14e-12	9.10e-12
Nd-144	8.45e-07	6.78e-08	4.08e-08	3.00e-08	2.57e-08	2.40e-08	2.91e-08	6.68e-08
Nd-147	8.76e-10	5.98e-10	3.66e-10	2.60e-10	1.71e-10	1.46e-10	1.60e-10	2.45e-10
Nd-149	4.23e-10	3.27e-10	2.14e-10	1.58e-10	1.05e-10	7.53e-11	8.44e-11	1.32e-10
Nd-151	1.48e-10	1.20e-10	7.96e-11	5.93e-11	3.95e-11	2.81e-11	3.15e-11	4.88e-11
Nd-152	3.07e-10	2.53e-10	1.69e-10	1.27e-10	8.52e-11	5.75e-11	6.49e-11	1.02e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

	Dose Coefficient (Sv/Bq)						Per Capita	
Nuclide	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Promethium								
Pm-141	2.24e-10	1.80e-10	1.19e-10	8.92e-11	5.96e-11	4.22e-11	4.72e-11	7.33e-11
Pm-143	1.12e-09	5.42e-10	3.04e-10	2.16e-10	1.49e-10	1.46e-10	1.58e-10	2.40e-10
Pm-144	5.54e-09	2.46e-09	1.39e-09	9.91e-10	6.88e-10	6.77e-10	7.35e-10	1.12e-09
Pm-145	6.54e-10	1.57e-10	8.84e-11	6.36e-11	4.60e-11	4.57e-11	5.08e-11	8.71e-11
Pm-146	5.72e-09	1.58e-09	9.11e-10	6.45e-10	4.61e-10	4.48e-10	4.96e-10	8.32e-10
Pm-147	6.72e-10	5.66e-11	2.63e-11	1.61e-11	1.16e-11	8.42e-12	1.28e-11	4.48e-11
Pm-148	3.68e-09	2.60e-09	1.57e-09	1.10e-09	7.16e-10	6.44e-10	7.03e-10	1.06e-09
Pm-148m	4.25e-09	2.98e-09	1.71e-09	1.22e-09	8.48e-10	8.13e-10	8.72e-10	1.25e-09
Pm-149	9.28e-10	6.45e-10	4.15e-10	2.93e-10	1.87e-10	1.51e-10	1.68e-10	2.62e-10
Pm-150	1.07e-09	7.93e-10	5.07e-10	3.70e-10	2.49e-10	1.91e-10	2.12e-10	3.25e-10
Pm-151	8.93e-10	6.68e-10	4.06e-10	2.90e-10	1.93e-10	1.65e-10	1.81e-10	2.71e-10
Samarium								
Sm-140	5.85e-10	4.71e-10	3.14e-10	2.36e-10	1.60e-10	1.12e-10	1.25e-10	1.94e-10
Sm-141	2.48e-10	1.98e-10	1.32e-10	9.84e-11	6.57e-11	4.71e-11	5.26e-11	8.13e-11
Sm-141m	3.75e-10	2.88e-10	1.91e-10	1.41e-10	9.43e-11	7.07e-11	7.85e-11	1.20e-10
Sm-142	1.05e-09	8.04e-10	5.26e-10	3.91e-10	2.63e-10	1.88e-10	2.10e-10	3.28e-10
Sm-145	6.52e-10	2.44e-10	1.30e-10	9.20e-11	6.15e-11	6.05e-11	6.68e-11	1.10e-10
Sm-146	1.12e-06	9.03e-08	5.43e-08	4.00e-08	3.41e-08	3.18e-08	3.85e-08	8.86e-08
Sm-147	1.03e-06	8.24e-08	4.96e-08	3.65e-08	3.12e-08	2.91e-08	3.53e-08	8.13e-08
Sm-148	8.82e-07	7.07e-08	4.26e-08	3.13e-08	2.68e-08	2.50e-08	3.03e-08	6.97e-08
Sm-151	4.17e-10	3.33e-11	1.96e-11	1.44e-11	1.25e-11	1.19e-11	1.44e-11	3.29e-11
Sm-153	5.13e-10	3.75e-10	2.33e-10	1.66e-10	1.08e-10	8.67e-11	9.62e-11	1.49e-10
Sm-155	1.82e-10	1.50e-10	9.98e-11	7.47e-11	4.99e-11	3.36e-11	3.80e-11	6.00e-11
Sm-156	3.01e-10	2.24e-10	1.38e-10	9.96e-11	6.66e-11	5.30e-11	5.86e-11	8.99e-11
Europium								
Eu-145	1.87e-09	1.55e-09	8.87e-10	6.33e-10	4.41e-10	4.28e-10	4.57e-10	6.37e-10
Eu-146	3.48e-09	2.89e-09	1.65e-09	1.18e-09	8.21e-10	7.97e-10	8.50e-10	1.19e-09
Eu-147	9.40e-10	7.26e-10	4.11e-10	2.95e-10	2.04e-10	1.98e-10	2.12e-10	2.99e-10
Eu-148	4.47e-09	3.16e-09	1.80e-09	1.29e-09	8.93e-10	8.71e-10	9.32e-10	1.33e-09
Eu-149	3.13e-10	1.70e-10	9.27e-11	6.60e-11	4.44e-11	4.32e-11	4.69e-11	7.15e-11
Eu-150	1.08e-08	2.90e-09	1.68e-09	1.25e-09	9.56e-10	9.23e-10	1.01e-09	1.62e-09
Eu-150m	5.29e-10	3.82e-10	2.45e-10	1.76e-10	1.15e-10	8.64e-11	9.68e-11	1.53e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Eu-152	8.83e-09	2.30e-09	1.31e-09	9.39e-10	6.87e-10	6.55e-10	7.28e-10	1.24e-09
Eu-152m	1.04e-09	7.44e-10	4.66e-10	3.35e-10	2.21e-10	1.75e-10	1.94e-10	3.01e-10
Eu-152n	1.16e-11	8.01e-12	4.80e-12	3.41e-12	2.34e-12	2.53e-12	2.67e-12	3.61e-12
Eu-154	1.08e-08	2.69e-09	1.52e-09	1.08e-09	7.68e-10	7.16e-10	8.06e-10	1.43e-09
Eu-154m	7.19e-12	4.74e-12	2.95e-12	2.10e-12	1.38e-12	1.48e-12	1.57e-12	2.16e-12
Eu-155	1.17e-09	1.87e-10	9.40e-11	6.49e-11	4.67e-11	4.42e-11	5.25e-11	1.13e-10
Eu-156	3.56e-09	2.59e-09	1.53e-09	1.08e-09	7.24e-10	6.75e-10	7.30e-10	1.06e-09
Eu-157	9.11e-10	6.67e-10	4.12e-10	2.95e-10	1.95e-10	1.59e-10	1.75e-10	2.69e-10
Eu-158	5.32e-10	4.18e-10	2.76e-10	2.05e-10	1.37e-10	9.85e-11	1.10e-10	1.71e-10
Eu-159	2.64e-10	2.16e-10	1.43e-10	1.07e-10	7.17e-11	4.90e-11	5.52e-11	8.68e-11
Gadolinium								
Gd-145	1.96e-10	1.48e-10	9.84e-11	7.25e-11	4.81e-11	3.87e-11	4.25e-11	6.31e-11
Gd-146	2.16e-09	1.00e-09	5.65e-10	4.06e-10	2.78e-10	2.77e-10	3.00e-10	4.54e-10
Gd-147	1.74e-09	1.41e-09	8.02e-10	5.73e-10	4.00e-10	3.84e-10	4.10e-10	5.77e-10
Gd-148	1.17e-06	8.82e-08	4.13e-08	2.75e-08	2.28e-08	1.96e-08	2.67e-08	8.00e-08
Gd-149	1.01e-09	8.16e-10	4.64e-10	3.33e-10	2.30e-10	2.22e-10	2.37e-10	3.34e-10
Gd-150	1.04e-06	7.93e-08	3.83e-08	2.63e-08	2.22e-08	1.92e-08	2.55e-08	7.28e-08
Gd-151	4.11e-10	1.84e-10	9.98e-11	7.11e-11	4.81e-11	4.64e-11	5.08e-11	8.03e-11
Gd-152	8.17e-07	6.19e-08	2.99e-08	2.06e-08	1.74e-08	1.50e-08	2.00e-08	5.71e-08
Gd-153	7.03e-10	2.72e-10	1.46e-10	1.04e-10	7.09e-11	7.02e-11	7.70e-11	1.24e-10
Gd-159	5.73e-10	4.12e-10	2.62e-10	1.88e-10	1.22e-10	9.38e-11	1.05e-10	1.65e-10
Terbium								
Tb-147	5.42e-10	3.99e-10	2.50e-10	1.79e-10	1.22e-10	1.07e-10	1.16e-10	1.69e-10
Tb-148	7.20e-10	5.41e-10	3.54e-10	2.61e-10	1.75e-10	1.34e-10	1.48e-10	2.25e-10
Tb-149	5.03e-10	3.40e-10	2.01e-10	1.41e-10	9.83e-11	9.33e-11	1.00e-10	1.45e-10
Tb-150	8.56e-10	6.13e-10	3.74e-10	2.65e-10	1.83e-10	1.64e-10	1.77e-10	2.58e-10
Tb-151	9.17e-10	7.22e-10	4.08e-10	2.90e-10	2.04e-10	1.95e-10	2.09e-10	2.95e-10
Tb-152	1.78e-09	1.34e-09	7.77e-10	5.50e-10	3.78e-10	3.48e-10	3.76e-10	5.46e-10
Tb-153	5.08e-10	4.19e-10	2.35e-10	1.68e-10	1.17e-10	1.14e-10	1.22e-10	1.70e-10
Tb-154	1.85e-09	1.47e-09	8.42e-10	5.97e-10	4.22e-10	4.08e-10	4.35e-10	6.09e-10
Tb-155	3.62e-10	3.04e-10	1.69e-10	1.22e-10	8.45e-11	8.38e-11	8.92e-11	1.24e-10
Tb-156	2.80e-09	2.34e-09	1.33e-09	9.53e-10	6.64e-10	6.46e-10	6.89e-10	9.60e-10
Tb-156m	2.88e-10	2.53e-10	1.44e-10	1.04e-10	7.15e-11	7.07e-11	7.52e-11	1.04e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Tb-156n	9.61e-11	8.26e-11	4.69e-11	3.38e-11	2.35e-11	2.25e-11	2.40e-11	3.36e-11
Tb-157	1.67e-10	2.72e-11	1.43e-11	1.03e-11	7.73e-12	7.31e-12	8.48e-12	1.70e-11
Tb-158	7.88e-09	1.74e-09	1.03e-09	7.83e-10	6.20e-10	5.99e-10	6.57e-10	1.07e-09
Tb-160	3.22e-09	1.86e-09	1.08e-09	7.67e-10	5.26e-10	4.91e-10	5.33e-10	7.97e-10
Tb-161	3.60e-10	2.49e-10	1.50e-10	1.07e-10	6.97e-11	5.41e-11	6.06e-11	9.72e-11
Tb-163	1.17e-10	9.26e-11	6.17e-11	4.56e-11	3.03e-11	2.21e-11	2.47e-11	3.80e-11
Dysprosium								
Dy-151	6.29e-11	4.41e-11	2.81e-11	2.02e-11	1.34e-11	1.31e-11	1.40e-11	1.97e-11
Dy-152	2.65e-10	1.98e-10	1.13e-10	7.96e-11	5.50e-11	5.29e-11	5.68e-11	8.12e-11
Dy-153	4.42e-10	3.33e-10	1.90e-10	1.33e-10	9.39e-11	9.17e-11	9.79e-11	1.38e-10
Dy-154	1.10e-06	8.43e-08	4.13e-08	2.82e-08	2.39e-08	2.10e-08	2.77e-08	7.76e-08
Dy-155	4.30e-10	3.30e-10	1.87e-10	1.32e-10	9.31e-11	9.03e-11	9.65e-11	1.36e-10
Dy-157	2.02e-10	1.53e-10	8.59e-11	6.06e-11	4.28e-11	4.19e-11	4.47e-11	6.31e-11
Dy-159	2.65e-10	1.37e-10	7.40e-11	5.27e-11	3.55e-11	3.55e-11	3.85e-11	5.85e-11
Dy-165	3.74e-10	2.92e-10	1.93e-10	1.43e-10	9.51e-11	6.48e-11	7.33e-11	1.17e-10
Dy-166	1.04e-09	6.98e-10	4.34e-10	2.99e-10	1.87e-10	1.80e-10	1.96e-10	2.91e-10
Holmium								
Ho-154	2.61e-10	2.09e-10	1.39e-10	1.04e-10	6.99e-11	5.02e-11	5.60e-11	8.61e-11
Ho-155	1.71e-10	1.31e-10	8.34e-11	6.10e-11	4.11e-11	3.32e-11	3.64e-11	5.44e-11
Ho-156	5.32e-10	4.01e-10	2.62e-10	1.93e-10	1.30e-10	9.99e-11	1.10e-10	1.67e-10
Ho-157	2.86e-11	2.08e-11	1.35e-11	9.82e-12	6.50e-12	5.76e-12	6.24e-12	9.03e-12
Ho-159	2.71e-11	1.85e-11	1.20e-11	8.64e-12	5.69e-12	5.62e-12	6.01e-12	8.39e-12
Ho-160	7.20e-11	4.71e-11	3.09e-11	2.19e-11	1.43e-11	1.50e-11	1.59e-11	2.19e-11
Ho-161	2.33e-11	1.61e-11	9.12e-12	6.26e-12	4.16e-12	4.23e-12	4.54e-12	6.59e-12
Ho-162	9.48e-12	6.97e-12	4.63e-12	3.41e-12	2.23e-12	1.89e-12	2.06e-12	3.02e-12
Ho-162m	7.37e-11	5.04e-11	3.16e-11	2.21e-11	1.49e-11	1.47e-11	1.57e-11	2.22e-11
Ho-163	1.03e-11	7.79e-13	3.78e-13	2.51e-13	2.08e-13	1.77e-13	2.40e-13	7.10e-13
Ho-164	4.50e-11	3.68e-11	2.45e-11	1.82e-11	1.21e-11	8.15e-12	9.22e-12	1.47e-11
Ho-164m	4.08e-11	3.13e-11	2.05e-11	1.52e-11	1.01e-11	7.20e-12	8.08e-12	1.27e-11
Ho-166	1.84e-09	1.27e-09	8.01e-10	5.67e-10	3.64e-10	3.00e-10	3.32e-10	5.16e-10
Ho-166m	1.47e-08	3.33e-09	1.99e-09	1.54e-09	1.23e-09	1.20e-09	1.31e-09	2.08e-09
Ho-167	2.34e-10	1.76e-10	1.12e-10	8.11e-11	5.48e-11	4.21e-11	4.67e-11	7.16e-11
Erbium								

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Er-156	1.54e-10	1.13e-10	7.24e-11	5.28e-11	3.56e-11	2.84e-11	3.13e-11	4.71e-11
Er-159	9.74e-11	6.80e-11	4.38e-11	3.13e-11	2.08e-11	1.96e-11	2.11e-11	3.00e-11
Er-161	2.75e-10	1.96e-10	1.15e-10	7.99e-11	5.57e-11	5.45e-11	5.83e-11	8.28e-11
Er-163	7.53e-12	5.12e-12	3.07e-12	2.15e-12	1.43e-12	1.53e-12	1.62e-12	2.25e-12
Er-165	4.27e-11	3.32e-11	1.79e-11	1.27e-11	8.72e-12	8.69e-12	9.29e-12	1.32e-11
Er-169	8.87e-11	4.61e-11	2.99e-11	2.16e-11	1.42e-11	8.41e-12	1.00e-11	1.85e-11
Er-171	6.60e-10	4.88e-10	3.06e-10	2.21e-10	1.48e-10	1.16e-10	1.28e-10	1.98e-10
Er-172	1.19e-09	9.28e-10	5.43e-10	3.85e-10	2.61e-10	2.49e-10	2.67e-10	3.82e-10
Thulium								
Tm-161	1.56e-10	1.14e-10	7.27e-11	5.25e-11	3.53e-11	3.08e-11	3.34e-11	4.87e-11
Tm-162	2.32e-10	1.79e-10	1.19e-10	8.88e-11	5.92e-11	4.47e-11	4.95e-11	7.50e-11
Tm-163	1.96e-10	1.35e-10	8.18e-11	5.66e-11	3.89e-11	4.00e-11	4.25e-11	5.92e-11
Tm-165	7.33e-10	5.97e-10	3.36e-10	2.41e-10	1.68e-10	1.61e-10	1.72e-10	2.43e-10
Tm-166	8.94e-10	6.68e-10	3.83e-10	2.68e-10	1.90e-10	1.85e-10	1.98e-10	2.79e-10
Tm-167	4.19e-10	3.18e-10	1.83e-10	1.33e-10	9.06e-11	8.23e-11	8.90e-11	1.29e-10
Tm-168	3.10e-09	1.85e-09	1.04e-09	7.46e-10	5.18e-10	5.06e-10	5.44e-10	7.94e-10
Tm-170	1.88e-09	6.92e-10	4.29e-10	2.97e-10	1.91e-10	1.53e-10	1.75e-10	3.12e-10
Tm-171	2.39e-10	1.71e-11	6.64e-12	3.59e-12	2.79e-12	1.99e-12	3.47e-12	1.45e-11
Tm-172	2.14e-09	1.54e-09	9.45e-10	6.67e-10	4.37e-10	3.87e-10	4.22e-10	6.31e-10
Tm-173	5.78e-10	4.29e-10	2.66e-10	1.91e-10	1.29e-10	1.02e-10	1.13e-10	1.73e-10
Tm-175	1.46e-10	1.16e-10	7.73e-11	5.74e-11	3.81e-11	2.75e-11	3.07e-11	4.75e-11
Ytterbium								
Yb-162	1.69e-10	1.26e-10	8.29e-11	6.11e-11	4.09e-11	3.20e-11	3.53e-11	5.31e-11
Yb-163	8.17e-11	6.28e-11	4.09e-11	3.00e-11	2.01e-11	1.60e-11	1.76e-11	2.63e-11
Yb-164	4.86e-10	3.70e-10	2.41e-10	1.79e-10	1.20e-10	8.83e-11	9.84e-11	1.52e-10
Yb-166	1.89e-09	1.64e-09	9.29e-10	6.70e-10	4.66e-10	4.52e-10	4.82e-10	6.69e-10
Yb-167	1.16e-11	7.84e-12	5.07e-12	3.74e-12	2.44e-12	2.43e-12	2.59e-12	3.60e-12
Yb-169	9.31e-10	6.21e-10	3.47e-10	2.51e-10	1.73e-10	1.69e-10	1.81e-10	2.61e-10
Yb-175	2.06e-10	1.47e-10	9.13e-11	6.56e-11	4.35e-11	3.27e-11	3.66e-11	5.82e-11
Yb-177	3.52e-10	2.74e-10	1.80e-10	1.34e-10	8.91e-11	6.21e-11	6.99e-11	1.10e-10
Yb-178	4.48e-10	3.45e-10	2.27e-10	1.69e-10	1.12e-10	7.68e-11	8.68e-11	1.38e-10
Lutetium								
Lu-165	9.76e-11	7.62e-11	5.03e-11	3.74e-11	2.49e-11	1.91e-11	2.11e-11	3.18e-11

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Lu-167	1.74e-10	1.20e-10	7.67e-11	5.45e-11	3.65e-11	3.52e-11	3.77e-11	5.33e-11
Lu-169	1.42e-09	1.15e-09	6.52e-10	4.65e-10	3.26e-10	3.16e-10	3.37e-10	4.72e-10
Lu-170	2.63e-09	2.17e-09	1.24e-09	8.86e-10	6.25e-10	6.11e-10	6.50e-10	9.00e-10
Lu-171	1.14e-09	9.30e-10	5.24e-10	3.76e-10	2.59e-10	2.52e-10	2.69e-10	3.79e-10
Lu-172	2.94e-09	2.43e-09	1.39e-09	9.94e-10	6.92e-10	6.70e-10	7.15e-10	9.99e-10
Lu-173	1.26e-09	4.03e-10	2.16e-10	1.53e-10	1.06e-10	1.03e-10	1.14e-10	1.93e-10
Lu-174	1.14e-09	2.66e-10	1.40e-10	9.69e-11	6.77e-11	6.51e-11	7.42e-11	1.39e-10
Lu-174m	7.83e-10	1.80e-10	9.21e-11	6.39e-11	4.37e-11	4.05e-11	4.69e-11	9.17e-11
Lu-176	9.78e-09	1.67e-09	9.74e-10	7.40e-10	5.86e-10	5.35e-10	6.05e-10	1.10e-09
Lu-176m	4.47e-10	3.41e-10	2.24e-10	1.65e-10	1.09e-10	7.57e-11	8.55e-11	1.36e-10
Lu-177	2.36e-10	1.60e-10	9.96e-11	7.15e-11	4.72e-11	3.54e-11	3.97e-11	6.38e-11
Lu-177m	4.04e-09	1.69e-09	9.38e-10	6.71e-10	4.68e-10	4.47e-10	4.89e-10	7.69e-10
Lu-178	2.92e-10	2.39e-10	1.59e-10	1.19e-10	7.97e-11	5.37e-11	6.06e-11	9.58e-11
Lu-178m	1.60e-10	1.25e-10	8.31e-11	6.15e-11	4.09e-11	3.01e-11	3.35e-11	5.15e-11
Lu-179	5.64e-10	4.24e-10	2.76e-10	2.03e-10	1.34e-10	9.47e-11	1.07e-10	1.70e-10
Hafnium								
Hf-170	8.76e-10	7.32e-10	4.15e-10	2.98e-10	2.08e-10	2.03e-10	2.16e-10	3.01e-10
Hf-172	1.42e-08	5.83e-09	3.29e-09	2.11e-09	1.81e-09	1.70e-09	1.83e-09	2.76e-09
Hf-173	4.40e-10	3.49e-10	1.95e-10	1.40e-10	9.87e-11	9.61e-11	1.02e-10	1.43e-10
Hf-174	2.15e-06	9.17e-07	5.82e-07	4.65e-07	4.21e-07	3.91e-07	4.10e-07	5.36e-07
Hf-175	1.27e-09	7.82e-10	4.32e-10	2.96e-10	2.12e-10	1.97e-10	2.14e-10	3.20e-10
Hf-177m	3.01e-10	2.18e-10	1.42e-10	1.02e-10	6.85e-11	5.79e-11	6.32e-11	9.32e-11
Hf-178m	3.92e-08	1.99e-08	1.60e-08	1.47e-08	1.45e-08	1.46e-08	1.48e-08	1.62e-08
Hf-179m	2.46e-09	1.65e-09	9.15e-10	6.40e-10	4.52e-10	4.27e-10	4.60e-10	6.75e-10
Hf-180m	4.29e-10	3.15e-10	1.82e-10	1.29e-10	9.05e-11	8.60e-11	9.22e-11	1.31e-10
Hf-181	2.21e-09	1.25e-09	6.73e-10	4.49e-10	3.22e-10	2.85e-10	3.14e-10	4.97e-10
Hf-182	3.15e-08	1.58e-08	1.47e-08	1.47e-08	1.49e-08	1.46e-08	1.47e-08	1.55e-08
Hf-182m	1.52e-10	1.11e-10	7.15e-11	5.16e-11	3.46e-11	2.87e-11	3.14e-11	4.68e-11
Hf-183	3.31e-10	2.56e-10	1.68e-10	1.24e-10	8.28e-11	6.09e-11	6.79e-11	1.05e-10
Hf-184	8.89e-10	6.65e-10	3.99e-10	2.87e-10	1.95e-10	1.62e-10	1.78e-10	2.68e-10
Tantalum								
Ta-172	3.16e-10	2.41e-10	1.59e-10	1.18e-10	7.86e-11	5.99e-11	6.63e-11	1.01e-10
Ta-173	2.83e-10	2.11e-10	1.27e-10	9.10e-11	6.25e-11	5.53e-11	5.99e-11	8.74e-11

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Ta-174	3.49e-10	2.65e-10	1.73e-10	1.28e-10	8.57e-11	6.47e-11	7.18e-11	1.10e-10
Ta-175	6.69e-10	5.10e-10	2.90e-10	2.05e-10	1.45e-10	1.40e-10	1.50e-10	2.11e-10
Ta-176	1.00e-09	7.50e-10	4.31e-10	3.02e-10	2.14e-10	2.10e-10	2.24e-10	3.14e-10
Ta-177	1.30e-10	1.07e-10	5.86e-11	4.25e-11	2.91e-11	2.82e-11	3.02e-11	4.28e-11
Ta-178m	2.59e-10	1.84e-10	1.11e-10	7.84e-11	5.42e-11	5.18e-11	5.55e-11	7.89e-11
Ta-179	1.03e-10	6.25e-11	3.42e-11	2.48e-11	1.68e-11	1.62e-11	1.75e-11	2.60e-11
Ta-180	6.86e-11	5.14e-11	3.03e-11	2.19e-11	1.47e-11	1.23e-11	1.35e-11	2.04e-11
Ta-182	2.68e-09	1.85e-09	1.07e-09	7.64e-10	5.30e-10	5.04e-10	5.42e-10	7.79e-10
Ta-182m	3.12e-11	2.45e-11	1.62e-11	1.21e-11	8.00e-12	5.25e-12	5.98e-12	9.69e-12
Ta-183	9.02e-10	6.72e-10	3.98e-10	2.87e-10	1.93e-10	1.67e-10	1.82e-10	2.72e-10
Ta-184	1.46e-09	1.08e-09	6.51e-10	4.64e-10	3.18e-10	2.74e-10	2.99e-10	4.42e-10
Ta-185	3.69e-10	2.97e-10	1.97e-10	1.47e-10	9.83e-11	6.65e-11	7.51e-11	1.19e-10
Ta-186	2.17e-10	1.76e-10	1.17e-10	8.75e-11	5.83e-11	4.12e-11	4.62e-11	7.16e-11
Tungsten								
W-177	1.75e-10	1.18e-10	7.21e-11	5.07e-11	3.49e-11	3.37e-11	3.61e-11	5.14e-11
W-178	4.95e-10	2.79e-10	1.51e-10	9.94e-11	6.90e-11	5.90e-11	6.57e-11	1.08e-10
W-179	7.68e-12	3.74e-12	2.22e-12	1.58e-12	1.02e-12	1.07e-12	1.15e-12	1.71e-12
W-181	2.95e-10	1.43e-10	8.08e-11	5.44e-11	3.79e-11	3.22e-11	3.59e-11	5.92e-11
W-185	1.89e-09	6.99e-10	3.17e-10	1.65e-10	1.20e-10	6.15e-11	8.44e-11	2.29e-10
W-187	8.74e-10	6.47e-10	3.83e-10	2.64e-10	1.80e-10	1.44e-10	1.60e-10	2.50e-10
W-188	1.42e-08	5.61e-09	2.64e-09	1.40e-09	1.07e-09	5.91e-10	7.69e-10	1.88e-09
W-190	4.98e-10	3.53e-10	2.34e-10	1.73e-10	1.16e-10	8.12e-11	9.15e-11	1.45e-10
Rhenium								
Re-178	1.67e-10	1.25e-10	8.32e-11	6.21e-11	4.14e-11	3.05e-11	3.40e-11	5.22e-11
Re-179	5.95e-11	3.47e-11	2.27e-11	1.64e-11	1.07e-11	9.87e-12	1.07e-11	1.58e-11
Re-181	2.23e-09	9.93e-10	5.32e-10	3.50e-10	2.42e-10	2.10e-10	2.36e-10	4.04e-10
Re-182	7.14e-09	2.93e-09	1.55e-09	1.03e-09	7.15e-10	6.49e-10	7.25e-10	1.23e-09
Re-182m	1.46e-09	7.60e-10	4.17e-10	2.80e-10	1.96e-10	1.80e-10	1.98e-10	3.13e-10
Re-183	4.84e-09	1.17e-09	5.57e-10	3.33e-10	2.26e-10	1.91e-10	2.33e-10	5.24e-10
Re-184	4.57e-09	1.86e-09	1.02e-09	6.89e-10	4.81e-10	4.48e-10	4.96e-10	8.16e-10
Re-184m	7.22e-09	1.88e-09	9.35e-10	5.76e-10	3.97e-10	3.48e-10	4.12e-10	8.52e-10
Re-186	6.35e-09	1.91e-09	1.01e-09	6.12e-10	4.07e-10	3.14e-10	3.79e-10	8.04e-10
Re-186m	9.35e-09	1.93e-09	9.27e-10	5.40e-10	3.93e-10	3.31e-10	4.06e-10	9.38e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Re-187	2.45e-11	4.67e-12	2.05e-12	1.08e-12	7.28e-13	5.62e-13	7.58e-13	2.15e-12
Re-188	5.44e-09	2.28e-09	1.32e-09	8.60e-10	5.74e-10	4.40e-10	5.09e-10	9.32e-10
Re-188m	1.07e-10	4.16e-11	2.39e-11	1.54e-11	1.02e-11	8.11e-12	9.38e-12	1.73e-11
Re-189	3.77e-09	1.23e-09	6.56e-10	4.03e-10	2.69e-10	2.03e-10	2.44e-10	5.06e-10
Re-190m	2.04e-09	9.98e-10	6.05e-10	4.17e-10	2.81e-10	2.17e-10	2.46e-10	4.16e-10
Osmium								
Os-180	8.35e-11	5.60e-11	3.69e-11	2.69e-11	1.77e-11	1.54e-11	1.68e-11	2.47e-11
Os-181	3.59e-10	2.13e-10	1.25e-10	8.57e-11	5.90e-11	5.68e-11	6.14e-11	9.10e-11
Os-182	1.34e-09	1.01e-09	5.65e-10	4.03e-10	2.80e-10	2.65e-10	2.85e-10	4.10e-10
Os-183	5.00e-10	3.82e-10	2.14e-10	1.53e-10	1.07e-10	1.03e-10	1.10e-10	1.56e-10
Os-183m	6.26e-10	4.74e-10	2.69e-10	1.90e-10	1.34e-10	1.28e-10	1.37e-10	1.95e-10
Os-185	1.33e-09	1.06e-09	6.06e-10	4.33e-10	3.01e-10	2.92e-10	3.12e-10	4.38e-10
Os-186	1.37e-07	4.85e-08	2.89e-08	1.76e-08	1.19e-08	1.06e-08	1.20e-08	2.15e-08
Os-189m	3.76e-12	2.12e-12	8.60e-13	6.08e-13	3.22e-13	2.16e-13	2.72e-13	6.22e-13
Os-191	2.62e-10	1.79e-10	9.79e-11	7.03e-11	4.73e-11	4.36e-11	4.74e-11	7.12e-11
Os-191m	2.13e-11	1.37e-11	6.96e-12	4.98e-12	3.17e-12	2.74e-12	3.06e-12	5.02e-12
Os-193	8.50e-10	6.02e-10	3.81e-10	2.71e-10	1.75e-10	1.40e-10	1.56e-10	2.43e-10
Os-194	3.18e-09	1.74e-09	1.06e-09	6.99e-10	4.78e-10	4.58e-10	4.98e-10	7.53e-10
Os-196	6.90e-10	5.59e-10	3.72e-10	2.79e-10	1.87e-10	1.26e-10	1.42e-10	2.25e-10
Iridium								
Ir-182	2.97e-10	2.36e-10	1.56e-10	1.17e-10	7.86e-11	5.66e-11	6.31e-11	9.71e-11
Ir-183	1.97e-10	1.44e-10	8.92e-11	6.39e-11	4.34e-11	3.92e-11	4.24e-11	6.12e-11
Ir-184	6.79e-10	4.88e-10	2.99e-10	2.13e-10	1.46e-10	1.29e-10	1.40e-10	2.05e-10
Ir-185	6.50e-10	5.02e-10	2.85e-10	2.02e-10	1.42e-10	1.35e-10	1.45e-10	2.06e-10
Ir-186	1.45e-09	1.13e-09	6.44e-10	4.58e-10	3.21e-10	3.03e-10	3.25e-10	4.62e-10
Ir-186m	2.72e-10	1.96e-10	1.20e-10	8.48e-11	5.82e-11	5.40e-11	5.82e-11	8.34e-11
Ir-187	2.35e-10	1.78e-10	1.00e-10	7.10e-11	4.96e-11	4.72e-11	5.06e-11	7.25e-11
Ir-188	2.15e-09	1.76e-09	1.00e-09	7.16e-10	5.04e-10	4.88e-10	5.20e-10	7.25e-10
Ir-189	2.34e-10	1.68e-10	9.15e-11	6.56e-11	4.43e-11	4.15e-11	4.49e-11	6.65e-11
Ir-190	2.64e-09	2.13e-09	1.22e-09	8.72e-10	6.07e-10	5.87e-10	6.27e-10	8.78e-10
Ir-190m	1.07e-11	8.44e-12	4.68e-12	3.35e-12	2.32e-12	2.25e-12	2.41e-12	3.42e-12
Ir-190n	3.81e-10	2.71e-10	1.59e-10	1.11e-10	7.78e-11	7.53e-11	8.06e-11	1.15e-10
Ir-192	2.67e-09	1.74e-09	1.01e-09	7.06e-10	4.87e-10	4.48e-10	4.86e-10	7.21e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Ir-192n	3.65e-09	1.50e-09	9.22e-10	6.43e-10	5.55e-10	5.40e-10	5.72e-10	7.97e-10
Ir-193m	7.36e-11	2.79e-11	1.34e-11	8.47e-12	5.13e-12	3.47e-12	4.36e-12	9.96e-12
Ir-194	2.16e-09	1.49e-09	9.25e-10	6.55e-10	4.24e-10	3.45e-10	3.83e-10	5.99e-10
Ir-194m	6.34e-09	4.25e-09	2.47e-09	1.74e-09	1.22e-09	1.18e-09	1.27e-09	1.81e-09
Ir-195	2.80e-10	2.17e-10	1.43e-10	1.06e-10	7.02e-11	4.79e-11	5.42e-11	8.67e-11
Ir-195m	2.87e-10	2.14e-10	1.34e-10	9.70e-11	6.54e-11	5.08e-11	5.63e-11	8.65e-11
Ir-196m	4.71e-10	3.40e-10	2.17e-10	1.55e-10	1.05e-10	9.09e-11	9.89e-11	1.45e-10
Platinum								
Pt-184	8.93e-11	6.31e-11	3.92e-11	2.80e-11	1.90e-11	1.70e-11	1.84e-11	2.68e-11
Pt-186	3.38e-10	2.45e-10	1.42e-10	9.94e-11	6.98e-11	6.76e-11	7.23e-11	1.03e-10
Pt-187	2.26e-10	1.66e-10	9.97e-11	7.12e-11	4.88e-11	4.35e-11	4.71e-11	6.88e-11
Pt-188	1.33e-09	1.11e-09	6.44e-10	4.64e-10	3.20e-10	3.13e-10	3.33e-10	4.62e-10
Pt-189	3.62e-10	2.75e-10	1.55e-10	1.10e-10	7.70e-11	7.30e-11	7.83e-11	1.12e-10
Pt-190	1.58e-07	5.62e-08	3.35e-08	2.04e-08	1.38e-08	1.23e-08	1.40e-08	2.49e-08
Pt-191	5.10e-10	4.13e-10	2.32e-10	1.67e-10	1.15e-10	1.09e-10	1.17e-10	1.66e-10
Pt-193	4.25e-11	2.25e-11	1.18e-11	8.07e-12	4.79e-12	3.49e-12	4.13e-12	7.95e-12
Pt-193m	1.05e-10	6.65e-11	3.83e-11	2.78e-11	1.78e-11	1.13e-11	1.33e-11	2.41e-11
Pt-195m	2.50e-10	1.81e-10	9.97e-11	7.24e-11	4.76e-11	3.97e-11	4.39e-11	6.88e-11
Pt-197	2.89e-10	2.07e-10	1.31e-10	9.42e-11	6.12e-11	4.37e-11	4.95e-11	8.08e-11
Pt-197m	1.92e-10	1.50e-10	9.81e-11	7.24e-11	4.79e-11	3.20e-11	3.64e-11	5.90e-11
Pt-199	2.25e-10	1.82e-10	1.21e-10	9.05e-11	6.04e-11	4.10e-11	4.63e-11	7.31e-11
Pt-200	1.60e-09	1.08e-09	6.59e-10	4.64e-10	3.02e-10	2.52e-10	2.79e-10	4.34e-10
Pt-202	6.21e-09	4.25e-09	2.58e-09	1.80e-09	1.15e-09	9.88e-10	1.09e-09	1.70e-09
Gold								
Au-186	2.24e-10	1.80e-10	1.20e-10	9.00e-11	6.05e-11	4.30e-11	4.80e-11	7.40e-11
Au-190	2.26e-10	1.63e-10	1.07e-10	7.75e-11	5.17e-11	4.48e-11	4.87e-11	7.09e-11
Au-191	1.79e-10	1.23e-10	7.27e-11	5.12e-11	3.54e-11	3.35e-11	3.60e-11	5.20e-11
Au-192	6.67e-10	4.71e-10	2.78e-10	1.96e-10	1.37e-10	1.31e-10	1.40e-10	2.00e-10
Au-193	2.25e-10	1.53e-10	8.47e-11	6.09e-11	4.19e-11	3.89e-11	4.21e-11	6.22e-11
Au-194	1.30e-09	9.64e-10	5.48e-10	3.93e-10	2.74e-10	2.63e-10	2.82e-10	4.00e-10
Au-195	1.16e-09	4.52e-10	2.45e-10	1.63e-10	1.08e-10	9.93e-11	1.12e-10	1.93e-10
Au-196	1.14e-09	7.50e-10	4.25e-10	3.04e-10	2.11e-10	2.02e-10	2.17e-10	3.15e-10
Au-196m	4.10e-10	2.44e-10	1.40e-10	1.00e-10	6.75e-11	5.23e-11	5.87e-11	9.63e-11

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Au-198	1.84e-09	1.12e-09	6.68e-10	4.69e-10	3.11e-10	2.71e-10	2.98e-10	4.62e-10
Au-198m	1.35e-09	8.05e-10	4.49e-10	3.20e-10	2.20e-10	2.02e-10	2.20e-10	3.33e-10
Au-199	5.18e-10	2.46e-10	1.37e-10	9.52e-11	6.39e-11	5.44e-11	6.09e-11	1.02e-10
Au-200	4.16e-10	3.32e-10	2.20e-10	1.65e-10	1.10e-10	7.52e-11	8.48e-11	1.34e-10
Au-200m	2.14e-09	1.55e-09	8.83e-10	6.30e-10	4.39e-10	4.10e-10	4.41e-10	6.38e-10
Au-201	1.46e-10	1.20e-10	7.97e-11	5.96e-11	3.98e-11	2.64e-11	2.99e-11	4.77e-11
Mercury								
Hg-190 ^(a)	1.02e-10	6.88e-11	4.38e-11	3.19e-11	2.14e-11	1.89e-11	2.05e-11	3.00e-11
Hg-190 ^(b)	9.91e-11	6.86e-11	4.39e-11	3.15e-11	2.13e-11	1.91e-11	2.07e-11	2.99e-11
Hg-190 ^(c)	9.80e-11	6.86e-11	4.39e-11	3.15e-11	2.13e-11	1.91e-11	2.07e-11	2.99e-11
Hg-191m ^(a)	2.25e-10	1.43e-10	8.87e-11	6.44e-11	4.27e-11	3.85e-11	4.18e-11	6.19e-11
Hg-191m ^(b)	2.12e-10	1.41e-10	8.79e-11	6.28e-11	4.23e-11	3.88e-11	4.20e-11	6.11e-11
Hg-191m ^(c)	2.05e-10	1.40e-10	8.78e-11	6.25e-11	4.22e-11	3.89e-11	4.20e-11	6.07e-11
Hg-192 ^(a)	6.60e-10	3.93e-10	2.23e-10	1.55e-10	1.08e-10	1.08e-10	1.16e-10	1.69e-10
Hg-192 ^(b)	6.53e-10	4.52e-10	2.54e-10	1.79e-10	1.27e-10	1.22e-10	1.31e-10	1.88e-10
Hg-192 ^(c)	6.44e-10	4.72e-10	2.65e-10	1.88e-10	1.33e-10	1.27e-10	1.36e-10	1.94e-10
Hg-193 ^(a)	3.40e-10	2.00e-10	1.16e-10	8.09e-11	5.46e-11	5.29e-11	5.72e-11	8.51e-11
Hg-193 ^(b)	3.23e-10	2.01e-10	1.17e-10	8.20e-11	5.67e-11	5.46e-11	5.88e-11	8.59e-11
Hg-193 ^(c)	3.03e-10	2.02e-10	1.17e-10	8.23e-11	5.73e-11	5.51e-11	5.92e-11	8.54e-11
Hg-193m ^(a)	1.32e-09	7.80e-10	4.44e-10	3.01e-10	2.07e-10	2.05e-10	2.21e-10	3.28e-10
Hg-193m ^(b)	1.24e-09	7.62e-10	4.33e-10	3.03e-10	2.11e-10	2.02e-10	2.18e-10	3.21e-10
Hg-193m ^(c)	1.13e-09	7.54e-10	4.28e-10	3.04e-10	2.12e-10	2.00e-10	2.16e-10	3.14e-10
Hg-194 ^(a)	4.74e-08	3.31e-08	1.98e-08	1.27e-08	9.16e-09	9.91e-09	1.05e-08	1.44e-08
Hg-194 ^(b)	3.84e-08	1.37e-08	8.16e-09	5.23e-09	3.78e-09	4.08e-09	4.41e-09	6.79e-09
Hg-194 ^(c)	2.42e-08	3.78e-09	2.25e-09	1.46e-09	1.05e-09	1.12e-09	1.28e-09	2.49e-09
Hg-195 ^(a)	2.73e-10	1.55e-10	8.50e-11	5.62e-11	3.80e-11	3.65e-11	3.99e-11	6.23e-11
Hg-195 ^(b)	2.45e-10	1.29e-10	7.10e-11	4.91e-11	3.36e-11	3.20e-11	3.49e-11	5.40e-11
Hg-195 ^(c)	2.06e-10	1.18e-10	6.53e-11	4.62e-11	3.18e-11	3.02e-11	3.28e-11	4.94e-11
Hg-195m ^(a)	2.09e-09	1.18e-09	6.40e-10	4.08e-10	2.80e-10	2.59e-10	2.86e-10	4.60e-10
Hg-195m ^(b)	1.76e-09	6.86e-10	3.77e-10	2.51e-10	1.71e-10	1.57e-10	1.76e-10	2.98e-10
Hg-195m ^(c)	1.26e-09	4.51e-10	2.51e-10	1.76e-10	1.19e-10	1.08e-10	1.21e-10	2.06e-10
Hg-197 ^(a)	1.08e-09	6.01e-10	3.22e-10	2.04e-10	1.39e-10	1.28e-10	1.42e-10	2.31e-10
Hg-197 ^(b)	8.98e-10	3.12e-10	1.68e-10	1.10e-10	7.48e-11	6.89e-11	7.78e-11	1.38e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Hg-197 ^(c)	6.12e-10	1.71e-10	9.20e-11	6.42e-11	4.31e-11	4.02e-11	4.56e-11	8.30e-11
Hg-197m ^(a)	1.49e-09	8.31e-10	4.49e-10	2.85e-10	1.93e-10	1.62e-10	1.83e-10	3.11e-10
Hg-197m ^(b)	1.24e-09	4.39e-10	2.42e-10	1.60e-10	1.08e-10	8.86e-11	1.02e-10	1.89e-10
Hg-197m ^(c)	8.54e-10	2.59e-10	1.47e-10	1.03e-10	6.92e-11	5.46e-11	6.35e-11	1.20e-10
Hg-199m ^(a)	1.68e-10	1.28e-10	8.25e-11	6.05e-11	4.00e-11	2.68e-11	3.05e-11	4.99e-11
Hg-199m ^(b)	1.54e-10	1.16e-10	7.68e-11	5.69e-11	3.77e-11	2.50e-11	2.85e-11	4.62e-11
Hg-199m ^(c)	1.47e-10	1.15e-10	7.61e-11	5.65e-11	3.75e-11	2.47e-11	2.81e-11	4.55e-11
Hg-203 ^(a)	1.49e-08	9.00e-09	5.07e-09	3.18e-09	2.25e-09	2.18e-09	2.37e-09	3.62e-09
Hg-203 ^(b)	1.21e-08	3.86e-09	2.18e-09	1.38e-09	9.73e-10	9.43e-10	1.05e-09	1.82e-09
Hg-203 ^(c)	7.72e-09	1.25e-09	7.09e-10	4.64e-10	3.26e-10	3.14e-10	3.70e-10	7.70e-10
(a) Methyl Mercury								
(b) Other Organic Mercury								
(c) Inorganic Mercury								
Thallium								
Tl-194	3.09e-10	2.42e-10	1.61e-10	1.20e-10	8.04e-11	5.74e-11	6.42e-11	9.94e-11
Tl-194m	2.26e-10	1.61e-10	1.07e-10	7.82e-11	5.15e-11	4.30e-11	4.71e-11	6.97e-11
Tl-195	1.42e-10	8.93e-11	5.62e-11	3.94e-11	2.61e-11	2.45e-11	2.65e-11	3.89e-11
Tl-196	3.37e-10	2.32e-10	1.51e-10	1.08e-10	7.23e-11	6.11e-11	6.68e-11	9.95e-11
Tl-197	1.51e-10	9.25e-11	5.44e-11	3.65e-11	2.46e-11	2.18e-11	2.40e-11	3.74e-11
Tl-198	4.61e-10	2.94e-10	1.85e-10	1.26e-10	8.67e-11	8.33e-11	8.96e-11	1.29e-10
Tl-198m	3.28e-10	2.18e-10	1.37e-10	9.58e-11	6.44e-11	5.46e-11	5.99e-11	9.10e-11
Tl-199	1.73e-10	1.07e-10	6.13e-11	4.05e-11	2.75e-11	2.32e-11	2.58e-11	4.15e-11
Tl-200	1.22e-09	7.88e-10	4.71e-10	3.09e-10	2.19e-10	2.07e-10	2.24e-10	3.30e-10
Tl-201	6.88e-10	3.92e-10	2.02e-10	1.22e-10	8.34e-11	7.21e-11	8.13e-11	1.41e-10
Tl-202	2.77e-09	1.80e-09	1.04e-09	6.73e-10	4.80e-10	4.51e-10	4.89e-10	7.31e-10
Tl-204	1.03e-08	5.94e-09	2.88e-09	1.61e-09	1.10e-09	8.12e-10	9.62e-10	1.90e-09
Lead								
Pb-194	1.28e-10	9.58e-11	6.37e-11	4.73e-11	3.09e-11	2.34e-11	2.60e-11	3.99e-11
Pb-195m	1.25e-10	8.90e-11	5.84e-11	4.26e-11	2.75e-11	2.30e-11	2.52e-11	3.78e-11
Pb-196	1.51e-10	1.04e-10	6.71e-11	4.83e-11	3.11e-11	2.60e-11	2.86e-11	4.36e-11
Pb-197m	2.23e-10	1.57e-10	1.01e-10	7.24e-11	4.67e-11	3.88e-11	4.28e-11	6.52e-11
Pb-198	3.28e-10	2.31e-10	1.38e-10	9.73e-11	6.59e-11	6.08e-11	6.58e-11	9.62e-11
Pb-199	1.88e-10	1.28e-10	7.89e-11	5.56e-11	3.60e-11	3.39e-11	3.67e-11	5.40e-11

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Pb-200	1.33e-09	7.64e-10	4.38e-10	3.04e-10	2.01e-10	1.83e-10	2.01e-10	3.13e-10
Pb-201	5.92e-10	3.95e-10	2.26e-10	1.59e-10	1.06e-10	1.02e-10	1.10e-10	1.63e-10
Pb-202	1.04e-07	3.40e-08	2.14e-08	2.18e-08	2.63e-08	1.19e-08	1.35e-08	2.08e-08
Pb-202m	5.82e-10	4.10e-10	2.46e-10	1.72e-10	1.19e-10	1.14e-10	1.22e-10	1.75e-10
Pb-203	1.01e-09	5.15e-10	2.83e-10	1.97e-10	1.34e-10	1.23e-10	1.35e-10	2.14e-10
Pb-204m	2.46e-10	1.71e-10	1.09e-10	7.75e-11	5.19e-11	4.91e-11	5.28e-11	7.52e-11
Pb-205	1.22e-09	4.08e-10	2.37e-10	1.88e-10	1.50e-10	9.12e-11	1.06e-10	1.93e-10
Pb-209	1.77e-10	1.16e-10	7.49e-11	5.44e-11	3.60e-11	2.32e-11	2.68e-11	4.56e-11
Pb-210	1.12e-05	2.94e-06	1.79e-06	1.41e-06	7.76e-07	3.55e-07	4.96e-07	1.30e-06
Pb-211	2.08e-09	6.38e-10	3.68e-10	2.47e-10	1.61e-10	1.01e-10	1.25e-10	2.73e-10
Pb-212	1.95e-07	5.13e-08	2.50e-08	1.38e-08	8.67e-09	5.60e-09	7.54e-09	2.03e-08
Pb-214	1.28e-09	4.30e-10	2.55e-10	1.74e-10	1.14e-10	7.70e-11	9.25e-11	1.86e-10
Bismuth								
Bi-200	2.66e-10	1.86e-10	1.20e-10	8.66e-11	5.75e-11	5.03e-11	5.47e-11	8.03e-11
Bi-201	4.57e-10	3.25e-10	1.99e-10	1.41e-10	9.59e-11	8.79e-11	9.50e-11	1.38e-10
Bi-202	4.52e-10	3.16e-10	1.97e-10	1.38e-10	9.42e-11	8.95e-11	9.61e-11	1.37e-10
Bi-203	1.58e-09	1.21e-09	6.90e-10	4.87e-10	3.43e-10	3.29e-10	3.52e-10	4.99e-10
Bi-204	1.93e-09	1.49e-09	8.48e-10	5.98e-10	4.22e-10	4.05e-10	4.33e-10	6.13e-10
Bi-205	2.81e-09	2.19e-09	1.26e-09	8.97e-10	6.25e-10	6.12e-10	6.53e-10	9.13e-10
Bi-206	5.28e-09	4.21e-09	2.42e-09	1.72e-09	1.20e-09	1.16e-09	1.24e-09	1.74e-09
Bi-207	4.53e-09	2.99e-09	1.76e-09	1.23e-09	8.64e-10	8.32e-10	8.93e-10	1.28e-09
Bi-208	4.74e-09	3.24e-09	1.93e-09	1.36e-09	9.82e-10	9.82e-10	1.04e-09	1.44e-09
Bi-210	9.11e-08	2.15e-08	1.27e-08	8.88e-09	3.17e-09	2.14e-09	3.13e-09	9.27e-09
Bi-210m	4.60e-07	1.44e-07	7.80e-08	4.69e-08	3.13e-08	2.55e-08	3.02e-08	6.12e-08
Bi-212	9.23e-10	5.06e-10	3.19e-10	2.30e-10	1.52e-10	1.11e-10	1.26e-10	2.10e-10
Bi-213	4.95e-10	2.65e-10	1.67e-10	1.20e-10	7.93e-11	5.52e-11	6.34e-11	1.09e-10
Bi-214	2.99e-10	2.07e-10	1.37e-10	1.01e-10	6.63e-11	4.77e-11	5.37e-11	8.53e-11
Polonium								
Po-203 ^(a)	2.34e-10	1.61e-10	1.00e-10	7.20e-11	4.86e-11	4.38e-11	4.74e-11	6.91e-11
Po-203 ^(b)	2.20e-10	1.61e-10	1.00e-10	7.18e-11	4.87e-11	4.39e-11	4.74e-11	6.85e-11
Po-204 ^(a)	1.50e-09	7.65e-10	4.37e-10	3.05e-10	2.02e-10	1.89e-10	2.07e-10	3.25e-10
Po-204 ^(b)	9.55e-10	6.90e-10	3.93e-10	2.78e-10	1.93e-10	1.82e-10	1.96e-10	2.83e-10
Po-205 ^(a)	2.64e-10	1.67e-10	1.03e-10	7.26e-11	4.89e-11	4.80e-11	5.15e-11	7.38e-11

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Po-205 ^(b)	2.41e-10	1.66e-10	1.02e-10	7.15e-11	4.88e-11	4.81e-11	5.14e-11	7.25e-11
Po-206 ^(a)	3.84e-07	1.03e-07	5.77e-08	3.93e-08	1.71e-08	1.31e-08	1.72e-08	4.33e-08
Po-206 ^(b)	7.87e-08	2.22e-08	1.25e-08	8.53e-09	3.90e-09	3.07e-09	3.92e-09	9.34e-09
Po-207 ^(a)	4.99e-10	3.54e-10	2.08e-10	1.46e-10	1.00e-10	9.65e-11	1.04e-10	1.49e-10
Po-207 ^(b)	5.21e-10	3.79e-10	2.20e-10	1.54e-10	1.08e-10	1.04e-10	1.11e-10	1.58e-10
Po-208 ^(a)	9.65e-05	1.92e-05	1.18e-05	8.39e-06	2.59e-06	1.68e-06	2.67e-06	8.88e-06
Po-208 ^(b)	1.95e-05	3.84e-06	2.36e-06	1.68e-06	5.18e-07	3.37e-07	5.36e-07	1.79e-06
Po-209 ^(a)	9.99e-05	1.95e-05	1.21e-05	8.58e-06	2.63e-06	1.71e-06	2.73e-06	9.13e-06
Po-209 ^(b)	2.02e-05	3.91e-06	2.42e-06	1.72e-06	5.27e-07	3.42e-07	5.47e-07	1.84e-06
Po-210 ^(a)	6.22e-05	1.34e-05	8.06e-06	5.71e-06	1.84e-06	1.21e-06	1.87e-06	5.96e-06
Po-210 ^(b)	1.26e-05	2.68e-06	1.61e-06	1.14e-06	3.68e-07	2.42e-07	3.74e-07	1.20e-06
(a) Organic Polonium								
(b) Inorganic Polonium								
Astatine								
At-205	1.19e-09	3.87e-10	2.09e-10	1.26e-10	8.32e-11	6.71e-11	7.96e-11	1.61e-10
At-206	1.41e-09	5.30e-10	3.07e-10	2.07e-10	1.16e-10	9.19e-11	1.09e-10	2.16e-10
At-207	1.21e-08	5.46e-09	2.74e-09	1.35e-09	8.86e-10	6.62e-10	8.14e-10	1.80e-09
At-208	7.26e-09	2.29e-09	1.35e-09	8.94e-10	3.70e-10	2.73e-10	3.61e-10	9.01e-10
At-209	3.49e-08	1.89e-08	9.67e-09	4.46e-09	2.92e-09	2.04e-09	2.55e-09	5.75e-09
At-210	1.67e-07	6.94e-08	3.85e-08	2.20e-08	1.02e-08	6.85e-09	9.15e-09	2.32e-08
At-211	1.50e-06	8.28e-07	4.23e-07	1.89e-07	1.24e-07	8.40e-08	1.06e-07	2.46e-07
Francium								
Fr-212	1.89e-09	9.23e-10	4.96e-10	3.14e-10	1.65e-10	1.35e-10	1.61e-10	3.24e-10
Fr-222	3.89e-09	2.16e-09	1.11e-09	6.75e-10	4.05e-10	3.32e-10	3.87e-10	7.36e-10
Fr-223	9.27E-09	2.15E-09	8.68E-10	5.47E-10	4.89E-10	1.52E-10	2.48E-10	8.46E-10
Radium								
Ra-223	5.57e-06	7.81e-07	2.83e-07	1.85e-07	2.04e-07	4.13e-08	8.89e-08	3.98e-07
Ra-224	2.94e-06	4.63e-07	1.77e-07	1.09e-07	1.08e-07	2.89e-08	5.45e-08	2.21e-07
Ra-225	8.46e-06	1.05e-06	3.46e-07	2.21e-07	2.46e-07	4.51e-08	1.13e-07	5.64e-07
Ra-226	5.45e-06	9.65e-07	4.82e-07	4.87e-07	6.44e-07	1.27e-07	1.95e-07	5.44e-07
Ra-227	8.94e-10	3.17e-10	1.89e-10	1.36e-10	9.87e-11	5.85e-11	7.03e-11	1.38e-10
Ra-228	3.71e-05	5.99e-06	2.46e-06	2.45e-06	2.74e-06	3.41e-07	7.52e-07	3.04e-06
Ra-230	8.76e-10	6.57e-10	4.30e-10	3.18e-10	2.13e-10	1.49e-10	1.68e-10	2.66e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Actinium								
Ac-224	5.68e-08	1.04e-08	4.26e-09	2.59e-09	2.23e-09	7.69e-10	1.29e-09	4.64e-09
Ac-225	4.52e-07	1.44e-07	6.94e-08	4.13e-08	2.62e-08	2.18e-08	2.63e-08	5.68e-08
Ac-226	2.06e-08	1.76e-09	8.17e-10	4.97e-10	3.38e-10	2.37e-10	3.73e-10	1.36e-09
Ac-227	8.63e-06	6.67e-07	3.59e-07	2.32e-07	1.81e-07	1.73e-07	2.25e-07	6.17e-07
Ac-228	2.82e-09	7.36e-10	4.26e-10	2.95e-10	2.00e-10	1.60e-10	1.87e-10	3.63e-10
Thorium								
Th-226	1.64e-10	2.44e-11	1.20e-11	7.32e-12	4.60e-12	2.47e-12	3.82e-12	1.29e-11
Th-227	3.27e-07	2.29e-08	8.70e-09	4.85e-09	4.29e-09	1.34e-09	3.50e-09	1.90e-08
Th-228	5.57e-06	3.69e-07	1.49e-07	7.53e-08	5.23e-08	3.11e-08	6.60e-08	3.25e-07
Th-229	1.09e-05	8.70e-07	4.89e-07	3.20e-07	2.49e-07	2.10e-07	2.79e-07	7.84e-07
Th-230	2.61e-06	2.11e-07	1.24e-07	8.48e-08	6.89e-08	5.99e-08	7.62e-08	1.96e-07
Th-231	1.34e-10	1.00e-10	5.48e-11	4.00e-11	2.46e-11	1.71e-11	1.98e-11	3.47e-11
Th-232	2.76e-06	2.31e-07	1.46e-07	1.04e-07	8.51e-08	7.05e-08	8.82e-08	2.16e-07
Th-233	1.23e-10	1.01e-10	6.75e-11	5.04e-11	3.36e-11	2.24e-11	2.54e-11	4.03e-11
Th-234	4.06e-09	2.47e-09	1.52e-09	1.05e-09	6.70e-10	5.93e-10	6.54e-10	1.02e-09
Th-236	5.00e-10	3.97e-10	2.63e-10	1.96e-10	1.31e-10	9.08e-11	1.02e-10	1.60e-10
Protactinium								
Pa-227	3.20e-10	1.59e-10	1.02e-10	7.46e-11	4.89e-11	3.30e-11	3.82e-11	6.67e-11
Pa-228	9.99e-09	1.77e-09	8.92e-10	5.85e-10	4.13e-10	3.44e-10	4.22e-10	9.66e-10
Pa-229	3.29e-10	1.14e-10	5.96e-11	4.21e-11	2.80e-11	2.47e-11	2.80e-11	5.02e-11
Pa-230	1.71e-08	1.90e-09	9.16e-10	5.55e-10	3.96e-10	3.17e-10	4.34e-10	1.28e-09
Pa-231	5.10e-06	4.49e-07	3.14e-07	2.43e-07	2.07e-07	1.82e-07	2.14e-07	4.45e-07
Pa-232	1.18e-09	9.14e-10	5.20e-10	3.71e-10	2.58e-10	2.38e-10	2.56e-10	3.70e-10
Pa-233	8.34e-10	5.04e-10	2.91e-10	2.09e-10	1.40e-10	1.20e-10	1.32e-10	2.06e-10
Pa-234	8.98e-10	6.64e-10	3.93e-10	2.79e-10	1.92e-10	1.69e-10	1.84e-10	2.71e-10
Pa-235	1.60e-10	1.32e-10	8.81e-11	6.59e-11	4.40e-11	2.92e-11	3.31e-11	5.26e-11
Uranium								
U-230	1.49e-06	2.78e-07	1.19e-07	4.30e-08	3.71e-08	1.32e-08	2.61e-08	1.14e-07
U-231	3.74e-10	2.53e-10	1.35e-10	9.63e-11	6.19e-11	4.94e-11	5.56e-11	9.23e-11
U-232	6.90e-06	1.83e-06	9.85e-07	5.11e-07	4.90e-07	1.77e-07	2.57e-07	7.35e-07
U-233	8.56e-07	2.48e-07	1.60e-07	7.70e-08	7.00e-08	3.54e-08	4.55e-08	1.06e-07
U-234	8.38e-07	2.43e-07	1.57e-07	7.48e-08	6.76e-08	3.47e-08	4.46e-08	1.04e-07

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
U-235	7.60e-07	2.21e-07	1.43e-07	6.84e-08	6.16e-08	3.18e-08	4.08e-08	9.46e-08
U-235m	3.80e-17	9.76e-18	4.73e-18	1.66e-18	1.08e-18	5.82e-19	9.53e-19	3.47e-18
U-236	7.76e-07	2.25e-07	1.46e-07	6.95e-08	6.27e-08	3.24e-08	4.15e-08	9.65e-08
U-237	5.70e-10	3.48e-10	1.92e-10	1.34e-10	9.06e-11	7.56e-11	8.40e-11	1.35e-10
U-238	7.31e-07	2.12e-07	1.37e-07	6.59e-08	6.05e-08	3.07e-08	3.94e-08	9.11e-08
U-239	1.30e-10	1.07e-10	7.12e-11	5.31e-11	3.54e-11	2.38e-11	2.69e-11	4.27e-11
U-240	1.65e-09	1.14e-09	7.03e-10	5.00e-10	3.28e-10	2.64e-10	2.93e-10	4.58e-10
U-242	3.32e-10	2.74e-10	1.83e-10	1.38e-10	9.20e-11	6.17e-11	6.97e-11	1.10e-10
Neptunium								
Np-232	4.36e-11	2.87e-11	1.90e-11	1.37e-11	8.92e-12	8.24e-12	8.91e-12	1.29e-11
Np-233	7.64e-12	4.98e-12	3.13e-12	2.22e-12	1.44e-12	1.44e-12	1.54e-12	2.20e-12
Np-234	1.58e-09	1.31e-09	7.48e-10	5.35e-10	3.70e-10	3.56e-10	3.81e-10	5.35e-10
Np-235	1.75e-10	5.92e-11	3.00e-11	2.13e-11	1.25e-11	8.52e-12	1.06e-11	2.33e-11
Np-236	1.58e-07	1.47e-08	9.10e-09	7.31e-09	6.37e-09	5.54e-09	6.53e-09	1.37e-08
Np-236m	8.50e-10	1.64e-10	9.02e-11	6.23e-11	4.21e-11	3.30e-11	4.02e-11	8.85e-11
Np-237	1.61e-06	1.23e-07	6.06e-08	4.12e-08	3.46e-08	3.00e-08	3.98e-08	1.13e-07
Np-238	1.43e-09	9.62e-10	5.70e-10	4.06e-10	2.74e-10	2.45e-10	2.67e-10	3.98e-10
Np-239	4.69e-10	3.66e-10	2.14e-10	1.55e-10	1.04e-10	8.53e-11	9.39e-11	1.43e-10
Np-240	2.89e-10	2.19e-10	1.43e-10	1.05e-10	6.96e-11	5.25e-11	5.84e-11	8.99e-11
Np-241	9.04e-11	7.52e-11	5.00e-11	3.73e-11	2.49e-11	1.66e-11	1.88e-11	2.99e-11
Plutonium								
Pu-232	1.43e-10	6.04e-11	3.56e-11	2.19e-11	1.46e-11	1.32e-11	1.48e-11	2.55e-11
Pu-234	3.01e-10	1.35e-10	7.34e-11	5.02e-11	3.45e-11	3.14e-11	3.48e-11	5.71e-11
Pu-235	5.91e-12	3.65e-12	2.30e-12	1.61e-12	1.02e-12	1.07e-12	1.15e-12	1.63e-12
Pu-236	1.48e-06	1.06e-07	4.92e-08	2.85e-08	2.16e-08	2.26e-08	3.13e-08	9.80e-08
Pu-237	2.14e-10	1.38e-10	7.50e-11	5.47e-11	3.51e-11	3.04e-11	3.36e-11	5.33e-11
Pu-238	2.99e-06	2.49e-07	1.60e-07	1.21e-07	1.06e-07	1.10e-07	1.27e-07	2.57e-07
Pu-239	3.07e-06	2.59e-07	1.74e-07	1.35e-07	1.18e-07	1.21e-07	1.38e-07	2.71e-07
Pu-240	3.07e-06	2.59e-07	1.74e-07	1.35e-07	1.18e-07	1.21e-07	1.38e-07	2.71e-07
Pu-241	2.02e-08	1.92e-09	1.50e-09	1.24e-09	1.11e-09	1.13e-09	1.24e-09	2.10e-09
Pu-242	2.91e-06	2.46e-07	1.65e-07	1.28e-07	1.12e-07	1.15e-07	1.31e-07	2.57e-07
Pu-243	1.24e-10	9.43e-11	6.12e-11	4.49e-11	2.97e-11	1.97e-11	2.25e-11	3.68e-11
Pu-244	2.87e-06	2.43e-07	1.63e-07	1.26e-07	1.11e-07	1.14e-07	1.30e-07	2.54e-07

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Pu-245	8.40e-10	6.10e-10	3.75e-10	2.68e-10	1.78e-10	1.43e-10	1.58e-10	2.44e-10
Pu-246	3.44e-09	2.50e-09	1.48e-09	1.05e-09	6.97e-10	6.45e-10	6.98e-10	1.02e-09
Americium								
Am-237	5.52e-11	3.82e-11	2.39e-11	1.70e-11	1.13e-11	1.01e-11	1.10e-11	1.62e-11
Am-238	1.35e-10	8.75e-11	5.37e-11	3.73e-11	2.54e-11	2.55e-11	2.73e-11	3.86e-11
Am-239	2.77e-10	2.12e-10	1.20e-10	8.72e-11	5.87e-11	4.93e-11	5.41e-11	8.23e-11
Am-240	1.39e-09	1.13e-09	6.40e-10	4.58e-10	3.16e-10	2.98e-10	3.20e-10	4.56e-10
Am-241	2.52e-06	2.03e-07	1.14e-07	7.87e-08	6.31e-08	5.91e-08	7.44e-08	1.89e-07
Am-242	2.17e-09	2.78e-10	1.44e-10	9.62e-11	6.51e-11	4.55e-11	6.18e-11	1.75e-10
Am-242m	2.06e-06	1.79e-07	1.09e-07	7.88e-08	6.37e-08	6.00e-08	7.26e-08	1.66e-07
Am-243	2.45e-06	1.98e-07	1.12e-07	7.77e-08	6.24e-08	5.84e-08	7.33e-08	1.85e-07
Am-244	8.18e-10	5.21e-10	3.02e-10	2.14e-10	1.47e-10	1.29e-10	1.41e-10	2.14e-10
Am-244m	1.86e-10	1.49e-10	9.92e-11	7.42e-11	4.96e-11	3.30e-11	3.74e-11	5.96e-11
Am-245	1.88e-10	1.48e-10	9.80e-11	7.26e-11	4.82e-11	3.19e-11	3.63e-11	5.86e-11
Am-246	2.58e-10	2.02e-10	1.34e-10	9.89e-11	6.57e-11	4.57e-11	5.15e-11	8.14e-11
Am-246m	1.98e-10	1.57e-10	1.04e-10	7.72e-11	5.14e-11	3.70e-11	4.14e-11	6.41e-11
Am-247	1.67e-10	1.37e-10	9.16e-11	6.84e-11	4.56e-11	3.06e-11	3.46e-11	5.49e-11
Curium								
Cm-238	1.84e-10	1.22e-10	6.89e-11	4.76e-11	3.37e-11	3.26e-11	3.50e-11	5.08e-11
Cm-239	1.20e-10	8.92e-11	5.02e-11	3.59e-11	2.45e-11	2.29e-11	2.47e-11	3.60e-11
Cm-240	1.65e-07	9.39e-09	3.52e-09	1.88e-09	1.47e-09	1.09e-09	2.07e-09	9.50e-09
Cm-241	3.32e-09	1.08e-09	6.01e-10	4.26e-10	2.90e-10	2.63e-10	2.95e-10	5.10e-10
Cm-242	5.65e-07	3.31e-08	1.21e-08	6.43e-09	4.99e-09	3.51e-09	6.90e-09	3.25e-08
Cm-243	2.34e-06	1.84e-07	9.63e-08	6.29e-08	4.91e-08	4.62e-08	6.04e-08	1.67e-07
Cm-244	2.19e-06	1.69e-07	8.59e-08	5.46e-08	4.20e-08	3.93e-08	5.26e-08	1.53e-07
Cm-245	2.50e-06	2.02e-07	1.15e-07	7.98e-08	6.41e-08	5.99e-08	7.51e-08	1.89e-07
Cm-246	2.52e-06	2.03e-07	1.15e-07	7.96e-08	6.39e-08	5.98e-08	7.51e-08	1.90e-07
Cm-247	2.30e-06	1.85e-07	1.06e-07	7.31e-08	5.86e-08	5.49e-08	6.89e-08	1.73e-07
Cm-248	9.01e-06	7.22e-07	4.14e-07	2.87e-07	2.31e-07	2.17e-07	2.72e-07	6.80e-07
Cm-249	1.43e-10	1.15e-10	7.69e-11	5.72e-11	3.81e-11	2.50e-11	2.84e-11	4.57e-11
Cm-250	6.08e-05	4.87e-06	2.80e-06	1.95e-06	1.57e-06	1.47e-06	1.84e-06	4.59e-06
Cm-251	1.53e-10	1.25e-10	8.31e-11	6.20e-11	4.13e-11	2.77e-11	3.13e-11	4.98e-11
Berkelium								

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Bk-245	5.69e-10	4.35e-10	2.46e-10	1.79e-10	1.20e-10	1.06e-10	1.15e-10	1.72e-10
Bk-246	1.12e-09	9.10e-10	5.11e-10	3.66e-10	2.52e-10	2.39e-10	2.56e-10	3.66e-10
Bk-247	2.07e-06	1.67e-07	9.54e-08	6.83e-08	5.82e-08	5.43e-08	6.67e-08	1.60e-07
Bk-248m	2.12e-09	3.86e-10	2.15e-10	1.46e-10	9.76e-11	7.43e-11	9.21e-11	2.12e-10
Bk-249	3.61e-09	3.17e-10	1.93e-10	1.43e-10	1.23e-10	1.20e-10	1.41e-10	3.02e-10
Bk-250	4.74e-10	3.17e-10	1.98e-10	1.42e-10	9.65e-11	7.80e-11	8.60e-11	1.32e-10
Bk-251	1.59e-10	1.27e-10	8.42e-11	6.26e-11	4.16e-11	2.76e-11	3.13e-11	5.04e-11
Californium								
Cf-244	8.46e-11	4.98e-12	1.93e-12	1.05e-12	7.97e-13	6.06e-13	1.11e-12	4.93e-12
Cf-246	1.10e-08	6.04e-10	2.24e-10	1.10e-10	8.82e-11	5.50e-11	1.21e-10	6.17e-10
Cf-247	4.52e-11	3.07e-11	1.72e-11	1.20e-11	7.87e-12	7.16e-12	7.84e-12	1.20e-11
Cf-248	8.29e-07	5.41e-08	2.18e-08	1.15e-08	8.87e-09	6.23e-09	1.13e-08	4.94e-08
Cf-249	2.02e-06	1.63e-07	9.20e-08	6.49e-08	5.53e-08	5.20e-08	6.41e-08	1.55e-07
Cf-250	1.74e-06	1.33e-07	6.57e-08	4.07e-08	3.24e-08	2.90e-08	3.96e-08	1.19e-07
Cf-251	2.02e-06	1.63e-07	9.25e-08	6.55e-08	5.60e-08	5.26e-08	6.47e-08	1.55e-07
Cf-252	2.24e-06	1.56e-07	6.67e-08	3.67e-08	2.76e-08	2.08e-08	3.47e-08	1.38e-07
Cf-253	8.26e-08	4.33e-09	1.52e-09	6.93e-10	5.80e-10	3.25e-10	8.18e-10	4.53e-09
Cf-254	7.24e-06	4.07e-07	1.58e-07	8.27e-08	6.57e-08	4.26e-08	8.62e-08	4.14e-07
Cf-255	3.86e-10	1.07e-10	6.70e-11	4.83e-11	3.25e-11	2.07e-11	2.51e-11	5.14e-11
Einsteinium								
Es-249	7.06e-11	4.73e-11	2.88e-11	2.01e-11	1.36e-11	1.33e-11	1.43e-11	2.04e-11
Es-250	9.72e-10	6.41e-10	3.62e-10	2.56e-10	1.76e-10	1.60e-10	1.74e-10	2.61e-10
Es-250m	1.37e-10	7.37e-11	4.39e-11	3.03e-11	2.08e-11	2.07e-11	2.23e-11	3.28e-11
Es-251	2.35e-10	1.64e-10	8.86e-11	6.44e-11	4.21e-11	3.62e-11	3.99e-11	6.25e-11
Es-253	9.15e-08	4.69e-09	1.69e-09	7.49e-10	6.41e-10	3.52e-10	8.97e-10	5.01e-09
Es-254	7.71e-07	5.10e-08	2.08e-08	1.08e-08	8.42e-09	5.86e-09	1.06e-08	4.61e-08
Es-254m	9.24e-09	1.20e-09	6.18e-10	4.01e-10	2.83e-10	2.32e-10	2.98e-10	7.68e-10
Es-255	1.85e-07	9.78e-09	3.54e-09	1.58e-09	1.34e-09	7.32e-10	1.84e-09	1.02e-08
Es-256	2.22e-09	1.00e-09	6.20e-10	4.45e-10	3.02e-10	2.34e-10	2.64e-10	4.41e-10
Fermium								
Fm-251	1.21e-10	8.09e-11	4.50e-11	3.21e-11	2.17e-11	1.97e-11	2.15e-11	3.24e-11
Fm-252	6.87e-09	3.95e-10	1.55e-10	7.63e-11	6.06e-11	3.85e-11	8.01e-11	3.92e-10
Fm-253	1.42e-08	8.91e-10	3.50e-10	1.80e-10	1.41e-10	8.85e-11	1.76e-10	8.27e-10

Table A-1. Committed effective dose coefficients for ingested water and milk (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita	
	Newborn	1-year	5-year	10-year	15-year	Adult	Water	Milk
Fm-254	3.28e-10	2.28e-11	1.07e-11	6.27e-12	4.49e-12	3.42e-12	5.47e-12	2.06e-11
Fm-255	3.27e-09	2.25e-10	9.44e-11	5.23e-11	3.74e-11	2.39e-11	4.45e-11	1.97e-10
Fm-256	1.33e-08	6.53e-09	4.09e-09	2.96e-09	2.00e-09	1.55e-09	1.74e-09	2.85e-09
Fm-257	7.41e-07	4.25e-08	1.57e-08	7.30e-09	5.94e-09	3.43e-09	7.92e-09	4.16e-08

Table A-2. Committed effective dose coefficients for inhalation of particles

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Hydrogen								
H-3	F	6.73e-11	3.76e-11	1.66e-11	1.25e-11	8.36e-12	8.32e-12	9.16e-12
	M	2.95e-10	2.18e-10	1.14e-10	7.12e-11	4.98e-11	4.66e-11	5.19e-11
	S	1.45e-09	1.34e-09	8.82e-10	6.09e-10	5.45e-10	5.60e-10	5.79e-10
Beryllium								
Be-7	F	2.38e-10	1.34e-10	7.37e-11	5.18e-11	4.21e-11	3.07e-11	3.51e-11
	M	2.81e-10	1.92e-10	1.12e-10	7.86e-11	5.88e-11	6.51e-11	6.82e-11
	S	3.60e-10	2.56e-10	1.50e-10	1.06e-10	7.77e-11	9.21e-11	9.54e-11
Be-10	F	5.49e-08	3.97e-08	2.42e-08	2.00e-08	2.07e-08	1.43e-08	1.56e-08
	M	4.50e-08	3.01e-08	1.89e-08	1.42e-08	1.38e-08	1.11e-08	1.19e-08
	S	1.63e-07	1.50e-07	1.18e-07	9.45e-08	9.41e-08	9.63e-08	9.72e-08
Carbon								
C-11	F	6.09e-11	3.51e-11	1.59e-11	1.19e-11	7.87e-12	6.52e-12	7.52e-12
	M	8.87e-11	5.14e-11	2.54e-11	1.91e-11	1.39e-11	1.16e-11	1.30e-11
	S	8.90e-11	5.16e-11	2.55e-11	1.92e-11	1.40e-11	1.16e-11	1.31e-11
C-14	F	3.41e-10	2.56e-10	1.16e-10	8.42e-11	6.67e-11	7.02e-11	7.42e-11
	M	7.22e-09	3.43e-09	1.98e-09	1.31e-09	1.03e-09	9.75e-10	1.06e-09
	S	2.88e-08	2.37e-08	1.74e-08	1.33e-08	1.27e-08	1.29e-08	1.32e-08
Fluorine								
F-18	F	1.75e-10	1.00e-10	4.65e-11	3.36e-11	2.33e-11	1.96e-11	2.24e-11
	M	2.84e-10	1.48e-10	7.58e-11	5.62e-11	4.28e-11	3.64e-11	4.05e-11
	S	2.91e-10	1.51e-10	7.74e-11	5.74e-11	4.39e-11	3.73e-11	4.15e-11
Sodium								
Na-22	F	5.04e-09	3.47e-09	1.68e-09	1.32e-09	1.16e-09	1.50e-09	1.50e-09
	M	4.11e-08	2.66e-08	1.58e-08	1.09e-08	8.40e-09	9.35e-09	9.76e-09
	S	1.23e-07	9.96e-08	6.58e-08	4.59e-08	4.01e-08	4.44e-08	4.54e-08
Na-24	F	1.80e-09	1.04e-09	4.77e-10	3.35e-10	2.09e-10	1.80e-10	2.09e-10
	M	2.92e-09	1.63e-09	8.13e-10	5.85e-10	3.89e-10	3.69e-10	4.10e-10
	S	3.10e-09	1.73e-09	8.68e-10	6.26e-10	4.18e-10	4.00e-10	4.43e-10
Magnesium								
Mg-28	F	4.46e-09	2.58e-09	1.12e-09	7.27e-10	4.67e-10	3.53e-10	4.30e-10
	M	6.90e-09	3.53e-09	1.76e-09	1.25e-09	8.48e-10	7.72e-10	8.67e-10
	S	7.31e-09	3.69e-09	1.87e-09	1.33e-09	9.11e-10	8.44e-10	9.41e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

		Dose Coefficient (Sv/Bq)						
Nuclide	Type	Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Aluminum								
Al-26	F	2.71e-08	2.26e-08	1.40e-08	1.03e-08	9.89e-09	1.07e-08	1.09e-08
	M	7.87e-08	5.38e-08	3.31e-08	2.30e-08	1.90e-08	2.06e-08	2.14e-08
	S	5.62e-07	5.53e-07	4.62e-07	3.89e-07	4.02e-07	4.19e-07	4.19e-07
Silicon								
Si-31	F	3.51e-10	1.92e-10	8.36e-11	6.30e-11	3.91e-11	2.76e-11	3.39e-11
	M	5.22e-10	2.70e-10	1.31e-10	9.86e-11	6.93e-11	5.36e-11	6.21e-11
	S	5.33e-10	2.75e-10	1.34e-10	1.01e-10	7.11e-11	5.52e-11	6.38e-11
Si-32	F	1.13e-08	5.74e-09	2.12e-09	1.01e-09	8.11e-10	4.54e-10	6.22e-10
	M	7.01e-08	4.30e-08	2.55e-08	1.70e-08	1.35e-08	1.32e-08	1.41e-08
	S	5.11e-07	4.91e-07	4.02e-07	3.34e-07	3.41e-07	3.53e-07	3.54e-07
Phosphorus								
P-32	F	1.59e-08	7.29e-09	3.12e-09	1.86e-09	1.36e-09	9.19e-10	1.15e-09
	M	1.82e-08	8.41e-09	4.50e-09	2.98e-09	2.26e-09	2.09e-09	2.31e-09
	S	1.97e-08	9.18e-09	5.13e-09	3.46e-09	2.64e-09	2.54e-09	2.76e-09
P-33	F	2.62e-09	1.21e-09	5.62e-10	3.26e-10	2.14e-10	1.87e-10	2.21e-10
	M	4.99e-09	1.77e-09	1.00e-09	6.53e-10	5.20e-10	4.76e-10	5.24e-10
	S	5.92e-09	2.07e-09	1.20e-09	7.96e-10	6.45e-10	5.94e-10	6.50e-10
Sulfur								
S-35	F	1.62e-10	8.61e-11	3.57e-11	2.17e-11	1.37e-11	1.64e-11	1.80e-11
	M	4.75e-09	1.84e-09	1.06e-09	6.99e-10	5.56e-10	5.18e-10	5.66e-10
	S	7.05e-09	3.03e-09	1.75e-09	1.15e-09	9.08e-10	8.50e-10	9.27e-10
S-38	F	1.25e-09	7.11e-10	3.23e-10	2.40e-10	1.45e-10	1.14e-10	1.36e-10
	M	1.80e-09	9.51e-10	4.59e-10	3.41e-10	2.30e-10	1.91e-10	2.19e-10
	S	1.84e-09	9.66e-10	4.68e-10	3.48e-10	2.36e-10	1.96e-10	2.25e-10
Chlorine								
Cl-34m	F	2.43e-10	1.43e-10	6.81e-11	5.20e-11	3.27e-11	2.53e-11	2.99e-11
	M	3.03e-10	1.76e-10	8.64e-11	6.59e-11	4.31e-11	3.46e-11	4.01e-11
	S	3.05e-10	1.77e-10	8.70e-11	6.63e-11	4.34e-11	3.49e-11	4.04e-11
Cl-36	F	5.86e-09	3.33e-09	1.49e-09	8.95e-10	4.92e-10	4.32e-10	5.26e-10
	M	3.06e-08	1.74e-08	1.01e-08	6.65e-09	5.12e-09	4.93e-09	5.34e-09
	S	1.78e-07	1.65e-07	1.30e-07	1.05e-07	1.05e-07	1.08e-07	1.09e-07
Cl-38	F	2.75e-10	1.62e-10	7.70e-11	5.87e-11	3.68e-11	2.77e-11	3.30e-11
	M	3.52e-10	2.03e-10	9.96e-11	7.59e-11	4.97e-11	3.92e-11	4.56e-11
	S	3.55e-10	2.05e-10	1.00e-10	7.64e-11	5.01e-11	3.95e-11	4.59e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Cl-39	F	2.48e-10	1.44e-10	6.71e-11	5.11e-11	3.20e-11	2.42e-11	2.89e-11
	M	3.28e-10	1.85e-10	9.11e-11	6.93e-11	4.65e-11	3.70e-11	4.28e-11
	S	3.31e-10	1.87e-10	9.20e-11	6.99e-11	4.71e-11	3.75e-11	4.33e-11
Potassium								
K-40	F	6.60e-09	5.58e-09	3.15e-09	2.41e-09	1.52e-09	1.36e-09	1.52e-09
	M	5.70e-08	3.48e-08	2.08e-08	1.41e-08	1.10e-08	1.09e-08	1.17e-08
	S	3.99e-07	3.83e-07	3.15e-07	2.63e-07	2.68e-07	2.76e-07	2.77e-07
K-42	F	2.02e-09	1.15e-09	4.78e-10	3.27e-10	1.92e-10	1.28e-10	1.65e-10
	M	3.53e-09	1.79e-09	8.56e-10	6.15e-10	4.09e-10	3.48e-10	4.00e-10
	S	3.76e-09	1.88e-09	9.11e-10	6.57e-10	4.40e-10	3.81e-10	4.35e-10
K-43	F	1.11e-09	6.45e-10	2.70e-10	1.76e-10	1.07e-10	8.82e-11	1.06e-10
	M	2.06e-09	1.00e-09	5.06e-10	3.56e-10	2.51e-10	2.31e-10	2.57e-10
	S	2.22e-09	1.06e-09	5.46e-10	3.87e-10	2.75e-10	2.55e-10	2.83e-10
K-44	F	1.79e-10	1.06e-10	5.05e-11	3.85e-11	2.45e-11	1.92e-11	2.25e-11
	M	2.15e-10	1.26e-10	6.17e-11	4.71e-11	3.08e-11	2.48e-11	2.87e-11
	S	2.16e-10	1.26e-10	6.20e-11	4.73e-11	3.10e-11	2.50e-11	2.89e-11
K-45	F	1.12e-10	6.59e-11	3.13e-11	2.38e-11	1.54e-11	1.22e-11	1.42e-11
	M	1.32e-10	7.69e-11	3.75e-11	2.86e-11	1.90e-11	1.53e-11	1.76e-11
	S	1.32e-10	7.73e-11	3.78e-11	2.88e-11	1.92e-11	1.55e-11	1.79e-11
Calcium								
Ca-41	F	7.05e-11	3.59e-11	1.57e-11	1.09e-11	8.31e-12	4.46e-12	5.78e-12
	M	1.77e-10	1.29e-10	6.86e-11	4.23e-11	3.00e-11	2.63e-11	2.97e-11
	S	1.20e-09	1.17e-09	8.62e-10	6.55e-10	6.31e-10	6.42e-10	6.53e-10
Ca-45	F	5.59e-09	2.74e-09	9.51e-10	5.44e-10	4.79e-10	2.21e-10	3.09e-10
	M	9.24e-09	4.13e-09	2.24e-09	1.45e-09	1.17e-09	1.03e-09	1.14e-09
	S	1.34e-08	6.84e-09	3.98e-09	2.63e-09	2.06e-09	1.95e-09	2.12e-09
Ca-47	F	5.32e-09	2.74e-09	1.14e-09	6.76e-10	4.92e-10	3.67e-10	4.44e-10
	M	8.11e-09	3.59e-09	1.92e-09	1.29e-09	9.66e-10	9.15e-10	1.01e-09
	S	8.96e-09	3.89e-09	2.14e-09	1.46e-09	1.09e-09	1.06e-09	1.16e-09
Scandium								
Sc-43	F	4.62e-10	2.65e-10	1.16e-10	8.55e-11	5.30e-11	4.31e-11	5.09e-11
	M	6.53e-10	3.43e-10	1.67e-10	1.24e-10	8.65e-11	7.30e-11	8.28e-11
	S	6.70e-10	3.49e-10	1.71e-10	1.26e-10	8.89e-11	7.53e-11	8.52e-11
Sc-44	F	7.22e-10	4.18e-10	1.85e-10	1.38e-10	8.38e-11	6.91e-11	8.14e-11
	M	9.58e-10	5.22e-10	2.54e-10	1.88e-10	1.26e-10	1.09e-10	1.24e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Sc-44m	S	9.80e-10	5.30e-10	2.59e-10	1.92e-10	1.30e-10	1.12e-10	1.27e-10
	F	4.97e-09	3.23e-09	1.40e-09	9.32e-10	5.47e-10	4.83e-10	5.70e-10
	M	6.41e-09	3.46e-09	1.79e-09	1.25e-09	8.53e-10	8.42e-10	9.25e-10
Sc-46	S	6.97e-09	3.64e-09	1.93e-09	1.34e-09	9.35e-10	9.34e-10	1.02e-09
	F	5.08e-08	3.46e-08	1.46e-08	9.25e-09	5.24e-09	4.37e-09	5.33e-09
	M	3.03e-08	1.92e-08	1.03e-08	6.81e-09	4.81e-09	4.94e-09	5.35e-09
Sc-47	S	3.13e-08	1.94e-08	1.14e-08	7.88e-09	5.92e-09	6.57e-09	6.89e-09
	F	1.05e-09	6.26e-10	2.61e-10	1.58e-10	9.90e-11	8.00e-11	9.72e-11
	M	2.65e-09	9.45e-10	5.30e-10	3.58e-10	2.85e-10	2.58e-10	2.84e-10
Sc-48	S	3.07e-09	1.05e-09	6.00e-10	4.08e-10	3.28e-10	3.00e-10	3.29e-10
	F	3.72e-09	2.48e-09	1.09e-09	7.64e-10	4.52e-10	4.15e-10	4.79e-10
	M	4.54e-09	2.57e-09	1.32e-09	9.36e-10	6.32e-10	6.28e-10	6.89e-10
Sc-49	S	4.81e-09	2.64e-09	1.38e-09	9.79e-10	6.70e-10	6.74e-10	7.35e-10
	F	2.28e-10	1.32e-10	6.05e-11	4.60e-11	2.90e-11	2.13e-11	2.56e-11
	M	2.96e-10	1.65e-10	8.08e-11	6.17e-11	4.19e-11	3.18e-11	3.71e-11
	S	2.99e-10	1.67e-10	8.15e-11	6.23e-11	4.24e-11	3.22e-11	3.76e-11
Titanium								
Ti-44	F	7.18e-07	6.79e-07	5.09e-07	4.64e-07	4.56e-07	4.50e-07	4.55e-07
	M	3.43e-07	3.15e-07	2.48e-07	2.16e-07	2.26e-07	2.31e-07	2.31e-07
	S	6.41e-07	6.23e-07	5.14e-07	4.31e-07	4.44e-07	4.63e-07	4.63e-07
Ti-45	F	3.44e-10	1.96e-10	8.69e-11	6.41e-11	4.06e-11	3.30e-11	3.87e-11
	M	4.93e-10	2.60e-10	1.27e-10	9.43e-11	6.69e-11	5.60e-11	6.34e-11
	S	5.05e-10	2.64e-10	1.30e-10	9.62e-11	6.86e-11	5.76e-11	6.51e-11
Vanadium								
V-47	F	1.62e-10	9.49e-11	4.45e-11	3.39e-11	2.17e-11	1.68e-11	1.98e-11
	M	1.97e-10	1.14e-10	5.57e-11	4.24e-11	2.85e-11	2.25e-11	2.60e-11
	S	1.98e-10	1.14e-10	5.60e-11	4.27e-11	2.87e-11	2.27e-11	2.62e-11
V-48	F	5.55e-09	3.62e-09	1.83e-09	1.25e-09	8.31e-10	7.93e-10	8.83e-10
	M	1.12e-08	6.63e-09	3.67e-09	2.55e-09	1.83e-09	1.97e-09	2.10e-09
	S	1.35e-08	7.90e-09	4.42e-09	3.07e-09	2.22e-09	2.43e-09	2.58e-09
V-49	F	8.14e-11	4.70e-11	2.04e-11	1.10e-11	8.03e-12	5.95e-12	7.27e-12
	M	1.93e-10	1.40e-10	7.33e-11	4.42e-11	3.10e-11	2.78e-11	3.14e-11
	S	4.26e-10	3.41e-10	1.91e-10	1.18e-10	8.37e-11	7.83e-11	8.68e-11
V-50	F	5.18e-09	3.61e-09	2.01e-09	1.32e-09	9.61e-10	9.50e-10	1.03e-09
	M	1.59e-08	1.17e-08	7.20e-09	5.00e-09	3.83e-09	4.49e-09	4.63e-09

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Chromium Cr-48	S	1.34e-07	1.36e-07	1.16e-07	9.93e-08	1.04e-07	1.10e-07	1.09e-07
	F	5.01e-10	3.13e-10	1.55e-10	1.10e-10	7.20e-11	6.98e-11	7.74e-11
	M	8.25e-10	5.00e-10	2.71e-10	1.90e-10	1.34e-10	1.44e-10	1.54e-10
Cr-49	S	9.60e-10	5.77e-10	3.16e-10	2.22e-10	1.57e-10	1.71e-10	1.82e-10
	F	1.68e-10	9.75e-11	4.55e-11	3.45e-11	2.24e-11	1.77e-11	2.07e-11
	M	2.10e-10	1.19e-10	5.87e-11	4.45e-11	3.07e-11	2.47e-11	2.83e-11
Cr-51	S	2.11e-10	1.20e-10	5.91e-11	4.49e-11	3.10e-11	2.49e-11	2.85e-11
	F	1.61e-10	9.01e-11	4.39e-11	2.88e-11	2.02e-11	1.92e-11	2.14e-11
	M	1.98e-10	1.32e-10	7.13e-11	4.80e-11	3.41e-11	3.66e-11	3.92e-11
	S	2.38e-10	1.64e-10	8.95e-11	6.05e-11	4.29e-11	4.66e-11	4.97e-11
Manganese								
Mn-51	F	2.34e-10	1.36e-10	6.33e-11	4.84e-11	3.03e-11	2.29e-11	2.73e-11
	M	2.97e-10	1.69e-10	8.29e-11	6.33e-11	4.20e-11	3.29e-11	3.82e-11
	S	2.99e-10	1.71e-10	8.36e-11	6.38e-11	4.24e-11	3.33e-11	3.87e-11
Mn-52	F	6.03e-09	3.63e-09	1.89e-09	1.32e-09	8.62e-10	9.06e-10	9.87e-10
	M	6.26e-09	3.87e-09	2.07e-09	1.46e-09	9.96e-10	1.08e-09	1.16e-09
	S	6.50e-09	4.07e-09	2.18e-09	1.55e-09	1.06e-09	1.16e-09	1.24e-09
Mn-52m	F	1.53e-10	8.99e-11	4.27e-11	3.26e-11	2.07e-11	1.65e-11	1.93e-11
	M	1.80e-10	1.05e-10	5.14e-11	3.92e-11	2.56e-11	2.08e-11	2.40e-11
	S	1.81e-10	1.06e-10	5.17e-11	3.94e-11	2.58e-11	2.09e-11	2.41e-11
Mn-53	F	2.25e-10	8.38e-11	4.08e-11	2.44e-11	1.54e-11	1.32e-11	1.58e-11
	M	3.25e-10	2.26e-10	1.22e-10	7.43e-11	5.18e-11	4.72e-11	5.31e-11
	S	2.00e-09	1.95e-09	1.45e-09	1.10e-09	1.06e-09	1.08e-09	1.10e-09
Mn-54	F	7.13e-09	3.43e-09	1.92e-09	1.29e-09	9.01e-10	9.36e-10	1.01e-09
	M	8.88e-09	6.18e-09	3.73e-09	2.59e-09	1.94e-09	2.27e-09	2.35e-09
	S	1.65e-08	1.34e-08	8.50e-09	5.93e-09	4.70e-09	5.60e-09	5.73e-09
Mn-56	F	5.53e-10	3.18e-10	1.45e-10	1.09e-10	6.68e-11	5.25e-11	6.24e-11
	M	7.79e-10	4.20e-10	2.05e-10	1.54e-10	1.04e-10	8.51e-11	9.77e-11
	S	7.94e-10	4.26e-10	2.09e-10	1.57e-10	1.06e-10	8.71e-11	9.99e-11
Iron								
Fe-52	F	2.45e-09	1.50e-09	6.11e-10	4.17e-10	2.52e-10	2.15e-10	2.55e-10
	M	3.26e-09	1.74e-09	8.41e-10	6.11e-10	4.06e-10	3.59e-10	4.07e-10
	S	3.34e-09	1.76e-09	8.63e-10	6.29e-10	4.21e-10	3.75e-10	4.24e-10
Fe-55	F	5.15e-09	3.25e-09	1.71e-09	1.17e-09	9.06e-10	8.73e-10	9.44e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Fe-59	M	1.65e-09	1.03e-09	5.98e-10	3.96e-10	3.43e-10	3.30e-10	3.51e-10
	S	1.02e-09	8.62e-10	5.19e-10	3.29e-10	2.58e-10	2.53e-10	2.71e-10
	F	4.02e-08	1.95e-08	9.08e-09	6.61e-09	4.28e-09	4.00e-09	4.51e-09
	M	1.97e-08	9.17e-09	5.04e-09	3.50e-09	2.60e-09	2.61e-09	2.82e-09
Fe-60	S	1.69e-08	8.98e-09	5.18e-09	3.54e-09	2.67e-09	2.84e-09	3.01e-09
	F	1.89e-07	1.33e-07	8.39e-08	7.88e-08	7.79e-08	7.67e-08	7.78e-08
	M	7.45e-08	4.63e-08	3.19e-08	2.80e-08	3.04e-08	3.02e-08	3.04e-08
	S	2.40e-07	2.41e-07	2.12e-07	1.86e-07	1.95e-07	2.00e-07	2.00e-07
Cobalt								
Co-55	F	1.96e-09	1.15e-09	5.63e-10	4.07e-10	2.64e-10	2.46e-10	2.76e-10
	M	2.40e-09	1.33e-09	6.60e-10	4.75e-10	3.16e-10	2.98e-10	3.32e-10
	S	2.51e-09	1.37e-09	6.84e-10	4.92e-10	3.29e-10	3.10e-10	3.45e-10
Co-56	F	1.52e-08	7.25e-09	4.05e-09	2.74e-09	1.91e-09	1.83e-09	2.02e-09
	M	2.69e-08	1.72e-08	1.01e-08	6.99e-09	5.17e-09	5.84e-09	6.12e-09
	S	3.77e-08	2.56e-08	1.52e-08	1.06e-08	7.97e-09	9.17e-09	9.53e-09
Co-57	F	1.56e-09	6.95e-10	3.96e-10	2.67e-10	1.90e-10	1.76e-10	1.95e-10
	M	2.73e-09	1.81e-09	1.04e-09	7.07e-10	5.23e-10	5.56e-10	5.90e-10
	S	5.00e-09	3.79e-09	2.26e-09	1.54e-09	1.17e-09	1.28e-09	1.34e-09
Co-58	F	4.52e-09	2.13e-09	1.18e-09	7.98e-10	5.53e-10	5.29e-10	5.85e-10
	M	8.15e-09	5.08e-09	2.94e-09	2.03e-09	1.50e-09	1.68e-09	1.76e-09
	S	1.12e-08	7.41e-09	4.35e-09	3.02e-09	2.25e-09	2.57e-09	2.68e-09
Co-58m	F	3.59e-11	1.60e-11	8.53e-12	5.59e-12	3.87e-12	3.62e-12	4.06e-12
	M	5.44e-11	3.24e-11	1.83e-11	1.24e-11	9.08e-12	9.97e-12	1.06e-11
	S	7.07e-11	4.50e-11	2.59e-11	1.77e-11	1.32e-11	1.48e-11	1.55e-11
Co-60	F	3.19e-08	1.53e-08	9.62e-09	6.63e-09	5.37e-09	5.19e-09	5.55e-09
	M	4.49e-08	2.99e-08	1.86e-08	1.28e-08	1.02e-08	1.13e-08	1.17e-08
	S	1.32e-07	1.15e-07	8.08e-08	5.93e-08	5.65e-08	6.30e-08	6.34e-08
Co-60m	F	1.17e-11	2.99e-12	1.93e-12	1.37e-12	1.29e-12	1.09e-12	1.18e-12
	M	1.19e-11	3.07e-12	1.98e-12	1.41e-12	1.32e-12	1.12e-12	1.21e-12
	S	1.22e-11	3.39e-12	2.22e-12	1.58e-12	1.50e-12	1.32e-12	1.41e-12
Co-61	F	3.21e-10	1.66e-10	8.17e-11	6.15e-11	4.48e-11	3.49e-11	4.00e-11
	M	3.28e-10	1.69e-10	8.38e-11	6.31e-11	4.62e-11	3.62e-11	4.14e-11
	S	3.30e-10	1.70e-10	8.43e-11	6.34e-11	4.65e-11	3.65e-11	4.17e-11
Co-62m	F	1.19e-10	6.95e-11	3.38e-11	2.57e-11	1.70e-11	1.39e-11	1.60e-11
	M	1.19e-10	6.97e-11	3.39e-11	2.58e-11	1.71e-11	1.40e-11	1.61e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Nickel	S	1.19e-10	6.98e-11	3.40e-11	2.58e-11	1.71e-11	1.40e-11	1.61e-11
	F	1.79e-09	1.22e-09	6.22e-10	4.42e-10	2.81e-10	2.81e-10	3.10e-10
	M	4.16e-09	2.84e-09	1.58e-09	1.11e-09	7.82e-10	8.82e-10	9.30e-10
Ni-56	S	5.49e-09	3.79e-09	2.15e-09	1.52e-09	1.09e-09	1.25e-09	1.31e-09
	F	1.32e-09	9.48e-10	4.60e-10	3.33e-10	2.08e-10	1.98e-10	2.22e-10
	M	2.18e-09	1.29e-09	6.57e-10	4.69e-10	3.13e-10	3.12e-10	3.42e-10
Ni-57	S	2.41e-09	1.38e-09	7.12e-10	5.08e-10	3.42e-10	3.45e-10	3.77e-10
	F	4.09e-10	1.43e-10	8.51e-11	5.10e-11	3.61e-11	3.52e-11	3.92e-11
	M	5.16e-10	3.61e-10	2.01e-10	1.24e-10	8.77e-11	8.18e-11	9.10e-11
Ni-59	S	2.88e-09	2.82e-09	2.11e-09	1.63e-09	1.58e-09	1.60e-09	1.63e-09
	F	1.17e-09	3.95e-10	2.34e-10	1.39e-10	9.90e-11	9.79e-11	1.09e-10
	M	1.97e-09	1.08e-09	6.14e-10	3.86e-10	2.88e-10	2.75e-10	3.02e-10
Ni-63	S	7.42e-09	6.48e-09	4.65e-09	3.48e-09	3.30e-09	3.38e-09	3.45e-09
	F	5.13e-10	2.74e-10	1.32e-10	9.97e-11	6.78e-11	5.30e-11	6.16e-11
	M	5.61e-10	2.94e-10	1.44e-10	1.09e-10	7.54e-11	5.99e-11	6.90e-11
Ni-65	S	5.73e-10	2.99e-10	1.47e-10	1.11e-10	7.72e-11	6.16e-11	7.08e-11
	F	3.83e-09	2.01e-09	9.53e-10	6.73e-10	4.18e-10	3.48e-10	4.09e-10
	M	8.43e-09	3.74e-09	1.97e-09	1.37e-09	9.83e-10	9.06e-10	1.01e-09
Ni-66	S	9.62e-09	4.18e-09	2.24e-09	1.55e-09	1.13e-09	1.05e-09	1.16e-09
	F	1.62e-10	9.45e-11	4.52e-11	3.45e-11	2.20e-11	1.83e-11	2.11e-11
	M	1.86e-10	1.09e-10	5.39e-11	4.10e-11	2.69e-11	2.26e-11	2.58e-11
Copper	S	1.87e-10	1.10e-10	5.42e-11	4.12e-11	2.70e-11	2.27e-11	2.59e-11
	F	3.06e-10	1.72e-10	7.75e-11	5.82e-11	3.62e-11	3.02e-11	3.52e-11
	M	4.31e-10	2.29e-10	1.12e-10	8.28e-11	5.76e-11	4.86e-11	5.52e-11
Cu-60	S	4.40e-10	2.32e-10	1.14e-10	8.44e-11	5.90e-11	4.99e-11	5.65e-11
	F	2.88e-10	1.56e-10	7.07e-11	5.12e-11	3.22e-11	2.84e-11	3.27e-11
	M	5.62e-10	2.42e-10	1.26e-10	8.99e-11	6.81e-11	5.96e-11	6.63e-11
Cu-61	S	6.01e-10	2.53e-10	1.33e-10	9.47e-11	7.26e-11	6.37e-11	7.07e-11
	F	1.02e-09	4.72e-10	2.24e-10	1.58e-10	9.77e-11	8.93e-11	1.03e-10
	M	2.55e-09	8.35e-10	4.79e-10	3.28e-10	2.64e-10	2.39e-10	2.63e-10
Cu-64	S	2.87e-09	9.15e-10	5.34e-10	3.64e-10	2.98e-10	2.70e-10	2.96e-10
	F	1.62e-10	9.45e-11	4.52e-11	3.45e-11	2.20e-11	1.83e-11	2.11e-11
	M	1.86e-10	1.09e-10	5.39e-11	4.10e-11	2.69e-11	2.26e-11	2.58e-11
Cu-67	S	1.87e-10	1.10e-10	5.42e-11	4.12e-11	2.70e-11	2.27e-11	2.59e-11
	F	3.06e-10	1.72e-10	7.75e-11	5.82e-11	3.62e-11	3.02e-11	3.52e-11
	M	4.31e-10	2.29e-10	1.12e-10	8.28e-11	5.76e-11	4.86e-11	5.52e-11
Cu-64	S	4.40e-10	2.32e-10	1.14e-10	8.44e-11	5.90e-11	4.99e-11	5.65e-11
	F	2.88e-10	1.56e-10	7.07e-11	5.12e-11	3.22e-11	2.84e-11	3.27e-11
	M	5.62e-10	2.42e-10	1.26e-10	8.99e-11	6.81e-11	5.96e-11	6.63e-11
Cu-67	S	6.01e-10	2.53e-10	1.33e-10	9.47e-11	7.26e-11	6.37e-11	7.07e-11
	F	1.02e-09	4.72e-10	2.24e-10	1.58e-10	9.77e-11	8.93e-11	1.03e-10
	M	2.55e-09	8.35e-10	4.79e-10	3.28e-10	2.64e-10	2.39e-10	2.63e-10
Cu-64	S	2.87e-09	9.15e-10	5.34e-10	3.64e-10	2.98e-10	2.70e-10	2.96e-10
	F	1.62e-10	9.45e-11	4.52e-11	3.45e-11	2.20e-11	1.83e-11	2.11e-11
	M	1.86e-10	1.09e-10	5.39e-11	4.10e-11	2.69e-11	2.26e-11	2.58e-11
Zinc	S	1.87e-10	1.10e-10	5.42e-11	4.12e-11	2.70e-11	2.27e-11	2.59e-11
	F	3.06e-10	1.72e-10	7.75e-11	5.82e-11	3.62e-11	3.02e-11	3.52e-11
	M	4.31e-10	2.29e-10	1.12e-10	8.28e-11	5.76e-11	4.86e-11	5.52e-11
Zn-62	S	4.40e-10	2.32e-10	1.14e-10	8.44e-11	5.90e-11	4.99e-11	5.65e-11
	F	2.88e-10	1.56e-10	7.07e-11	5.12e-11	3.22e-11	2.84e-11	3.27e-11
	M	5.62e-10	2.42e-10	1.26e-10	8.99e-11	6.81e-11	5.96e-11	6.63e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Zn-63	M	2.97e-09	1.55e-09	7.51e-10	5.48e-10	3.61e-10	3.12e-10	3.56e-10
	S	3.10e-09	1.60e-09	7.81e-10	5.69e-10	3.78e-10	3.29e-10	3.75e-10
	F	2.02e-10	1.17e-10	5.48e-11	4.20e-11	2.65e-11	2.02e-11	2.40e-11
	M	2.49e-10	1.43e-10	7.01e-11	5.36e-11	3.54e-11	2.79e-11	3.24e-11
Zn-65	S	2.51e-10	1.44e-10	7.06e-11	5.39e-11	3.57e-11	2.82e-11	3.27e-11
	F	2.65e-08	1.07e-08	6.07e-09	3.97e-09	2.76e-09	2.67e-09	2.96e-09
	M	1.20e-08	6.53e-09	3.94e-09	2.65e-09	1.99e-09	2.15e-09	2.27e-09
	S	1.07e-08	8.31e-09	5.18e-09	3.60e-09	2.78e-09	3.25e-09	3.35e-09
Zn-69	F	1.12e-10	6.23e-11	2.91e-11	2.18e-11	1.52e-11	1.18e-11	1.37e-11
	M	1.58e-10	8.47e-11	4.26e-11	3.20e-11	2.46e-11	1.93e-11	2.18e-11
	S	1.60e-10	8.54e-11	4.31e-11	3.24e-11	2.49e-11	1.96e-11	2.22e-11
	F	7.48e-10	3.91e-10	1.75e-10	1.25e-10	7.44e-11	6.41e-11	7.54e-11
Zn-69m	M	1.30e-09	5.79e-10	2.93e-10	2.07e-10	1.48e-10	1.32e-10	1.48e-10
	S	1.38e-09	6.06e-10	3.10e-10	2.19e-10	1.59e-10	1.42e-10	1.59e-10
	F	5.91e-10	3.37e-10	1.54e-10	1.15e-10	7.06e-11	5.81e-11	6.82e-11
	M	8.58e-10	4.57e-10	2.23e-10	1.65e-10	1.13e-10	9.64e-11	1.09e-10
Zn-71m	S	8.80e-10	4.66e-10	2.29e-10	1.69e-10	1.16e-10	9.95e-11	1.13e-10
	F	5.21e-09	2.61e-09	1.25e-09	8.61e-10	5.29e-10	5.21e-10	5.88e-10
	M	6.39e-09	2.94e-09	1.58e-09	1.09e-09	7.77e-10	7.72e-10	8.43e-10
	S	6.64e-09	3.04e-09	1.67e-09	1.15e-09	8.38e-10	8.34e-10	9.06e-10
Gallium								
Ga-65	F	9.04e-11	5.13e-11	2.45e-11	1.85e-11	1.23e-11	9.89e-12	1.14e-11
	M	1.03e-10	5.84e-11	2.86e-11	2.17e-11	1.48e-11	1.20e-11	1.38e-11
	S	1.03e-10	5.86e-11	2.88e-11	2.18e-11	1.49e-11	1.21e-11	1.39e-11
Ga-66	F	1.70e-09	1.02e-09	4.57e-10	3.27e-10	2.00e-10	1.67e-10	1.96e-10
	M	2.44e-09	1.34e-09	6.44e-10	4.68e-10	3.05e-10	2.74e-10	3.11e-10
	S	2.54e-09	1.38e-09	6.67e-10	4.84e-10	3.17e-10	2.88e-10	3.25e-10
Ga-67	F	3.20e-10	1.99e-10	9.40e-11	6.23e-11	4.18e-11	3.89e-11	4.38e-11
	M	1.15e-09	3.97e-10	2.29e-10	1.57e-10	1.25e-10	1.17e-10	1.28e-10
	S	1.35e-09	4.48e-10	2.61e-10	1.80e-10	1.43e-10	1.35e-10	1.47e-10
Ga-68	F	2.65e-10	1.53e-10	7.03e-11	5.34e-11	3.34e-11	2.55e-11	3.04e-11
	M	3.41e-10	1.91e-10	9.35e-11	7.11e-11	4.77e-11	3.77e-11	4.37e-11
	S	3.44e-10	1.93e-10	9.44e-11	7.18e-11	4.83e-11	3.82e-11	4.42e-11
Ga-70	F	8.84e-11	5.17e-11	2.43e-11	1.84e-11	1.23e-11	9.45e-12	1.11e-11
	M	1.06e-10	6.11e-11	2.98e-11	2.26e-11	1.58e-11	1.23e-11	1.42e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Ga-72	S	1.06e-10	6.14e-11	2.99e-11	2.28e-11	1.59e-11	1.23e-11	1.42e-11
	F	1.64e-09	1.03e-09	4.70e-10	3.33e-10	2.07e-10	1.84e-10	2.12e-10
	M	2.47e-09	1.35e-09	6.71e-10	4.84e-10	3.25e-10	3.03e-10	3.38e-10
Ga-73	S	2.60e-09	1.39e-09	7.00e-10	5.04e-10	3.41e-10	3.20e-10	3.56e-10
	F	5.02e-10	2.78e-10	1.21e-10	8.71e-11	5.54e-11	4.27e-11	5.11e-11
	M	9.07e-10	4.03e-10	2.03e-10	1.48e-10	1.09e-10	8.99e-11	1.02e-10
	S	9.49e-10	4.15e-10	2.11e-10	1.54e-10	1.13e-10	9.43e-11	1.07e-10
Germanium								
Ge-66	F	4.15e-10	2.43e-10	1.10e-10	7.75e-11	4.75e-11	4.00e-11	4.70e-11
	M	6.70e-10	3.62e-10	1.75e-10	1.26e-10	8.38e-11	7.72e-11	8.67e-11
	S	7.04e-10	3.77e-10	1.83e-10	1.32e-10	8.83e-11	8.20e-11	9.18e-11
Ge-67	F	1.35e-10	7.88e-11	3.73e-11	2.85e-11	1.82e-11	1.42e-11	1.67e-11
	M	1.60e-10	9.26e-11	4.52e-11	3.44e-11	2.27e-11	1.81e-11	2.10e-11
	S	1.62e-10	9.32e-11	4.55e-11	3.47e-11	2.28e-11	1.83e-11	2.12e-11
Ge-68	F	4.09e-09	2.34e-09	1.10e-09	7.10e-10	4.04e-10	3.45e-10	4.14e-10
	M	6.89e-08	4.06e-08	2.40e-08	1.63e-08	1.26e-08	1.29e-08	1.37e-08
	S	1.47e-07	1.00e-07	6.21e-08	4.24e-08	3.40e-08	3.52e-08	3.70e-08
Ge-69	F	6.48e-10	3.89e-10	1.90e-10	1.30e-10	7.91e-11	6.94e-11	8.06e-11
	M	1.36e-09	7.75e-10	3.96e-10	2.80e-10	1.87e-10	1.84e-10	2.03e-10
	S	1.51e-09	8.57e-10	4.39e-10	3.12e-10	2.09e-10	2.08e-10	2.28e-10
Ge-71	F	2.93e-11	1.54e-11	6.74e-12	4.15e-12	2.25e-12	1.99e-12	2.43e-12
	M	1.02e-10	6.59e-11	3.22e-11	2.02e-11	1.33e-11	1.16e-11	1.34e-11
	S	1.26e-10	8.23e-11	4.05e-11	2.54e-11	1.69e-11	1.47e-11	1.69e-11
Ge-75	F	1.74e-10	9.89e-11	4.45e-11	3.33e-11	2.20e-11	1.64e-11	1.95e-11
	M	2.53e-10	1.34e-10	6.65e-11	5.01e-11	3.69e-11	2.88e-11	3.29e-11
	S	2.57e-10	1.36e-10	6.74e-11	5.08e-11	3.76e-11	2.93e-11	3.35e-11
Ge-77	F	1.22e-09	6.86e-10	3.05e-10	2.14e-10	1.28e-10	9.82e-11	1.20e-10
	M	2.39e-09	1.15e-09	5.77e-10	4.13e-10	2.85e-10	2.51e-10	2.83e-10
	S	2.59e-09	1.22e-09	6.20e-10	4.43e-10	3.10e-10	2.75e-10	3.09e-10
Ge-78	F	4.62e-10	2.61e-10	1.17e-10	8.67e-11	5.41e-11	4.00e-11	4.84e-11
	M	7.26e-10	3.76e-10	1.84e-10	1.37e-10	9.61e-11	7.81e-11	8.94e-11
	S	7.43e-10	3.82e-10	1.88e-10	1.40e-10	9.86e-11	8.05e-11	9.19e-11
Arsenic								
As-69	F	1.18e-10	6.87e-11	3.24e-11	2.47e-11	1.58e-11	1.25e-11	1.46e-11
	M	1.37e-10	7.99e-11	3.88e-11	2.95e-11	1.94e-11	1.57e-11	1.81e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
As-70	S	1.39e-10	8.06e-11	3.92e-11	2.98e-11	1.96e-11	1.59e-11	1.84e-11
	F	3.28e-10	1.90e-10	8.96e-11	6.85e-11	4.25e-11	3.46e-11	4.04e-11
	M	3.94e-10	2.27e-10	1.12e-10	8.51e-11	5.55e-11	4.69e-11	5.36e-11
As-71	S	3.96e-10	2.29e-10	1.13e-10	8.57e-11	5.60e-11	4.74e-11	5.41e-11
	F	8.79e-10	5.09e-10	2.39e-10	1.63e-10	9.90e-11	8.96e-11	1.04e-10
	M	1.76e-09	8.81e-10	4.61e-10	3.21e-10	2.26e-10	2.20e-10	2.42e-10
As-72	S	1.95e-09	9.64e-10	5.10e-10	3.56e-10	2.54e-10	2.49e-10	2.72e-10
	F	2.90e-09	1.66e-09	7.59e-10	5.29e-10	3.15e-10	2.56e-10	3.06e-10
	M	5.22e-09	2.76e-09	1.38e-09	9.79e-10	6.52e-10	6.03e-10	6.76e-10
As-73	S	5.65e-09	2.97e-09	1.49e-09	1.06e-09	7.14e-10	6.69e-10	7.46e-10
	F	7.88e-10	4.22e-10	1.88e-10	1.14e-10	6.34e-11	5.67e-11	6.85e-11
	M	5.76e-09	2.43e-09	1.36e-09	8.81e-10	6.73e-10	6.21e-10	6.86e-10
As-74	S	8.35e-09	3.86e-09	2.17e-09	1.41e-09	1.07e-09	9.97e-10	1.10e-09
	F	3.33e-09	1.95e-09	9.20e-10	6.05e-10	3.61e-10	3.28e-10	3.82e-10
	M	9.63e-09	4.86e-09	2.68e-09	1.81e-09	1.34e-09	1.34e-09	1.45e-09
As-76	S	1.19e-08	5.97e-09	3.34e-09	2.27e-09	1.70e-09	1.72e-09	1.85e-09
	F	2.45e-09	1.39e-09	6.17e-10	4.25e-10	2.50e-10	1.93e-10	2.36e-10
	M	4.60e-09	2.28e-09	1.14e-09	8.06e-10	5.46e-10	4.89e-10	5.52e-10
As-77	S	5.00e-09	2.44e-09	1.23e-09	8.75e-10	6.00e-10	5.45e-10	6.11e-10
	F	7.18e-10	4.00e-10	1.70e-10	1.11e-10	6.62e-11	5.38e-11	6.53e-11
	M	1.88e-09	7.04e-10	3.80e-10	2.60e-10	2.02e-10	1.78e-10	1.98e-10
As-78	S	2.10e-09	7.57e-10	4.19e-10	2.87e-10	2.27e-10	2.01e-10	2.22e-10
	F	4.96e-10	2.88e-10	1.32e-10	1.00e-10	6.14e-11	4.62e-11	5.55e-11
	M	6.55e-10	3.63e-10	1.76e-10	1.34e-10	8.83e-11	7.00e-11	8.13e-11
	S	6.63e-10	3.66e-10	1.78e-10	1.35e-10	8.95e-11	7.11e-11	8.25e-11
Selenium								
Se-70	F	2.93e-10	1.66e-10	7.79e-11	5.93e-11	3.60e-11	2.90e-11	3.42e-11
	M	3.71e-10	2.07e-10	1.02e-10	7.68e-11	5.13e-11	4.34e-11	4.94e-11
	S	3.74e-10	2.09e-10	1.03e-10	7.75e-11	5.19e-11	4.41e-11	5.02e-11
Se-72	F	2.33e-08	1.37e-08	7.60e-09	5.45e-09	2.12e-09	1.74e-09	2.27e-09
	M	2.07e-08	1.06e-08	5.95e-09	4.10e-09	2.69e-09	2.66e-09	2.94e-09
	S	2.07e-08	1.02e-08	5.75e-09	3.92e-09	2.94e-09	3.01e-09	3.23e-09
Se-73	F	7.81e-10	4.46e-10	2.13e-10	1.58e-10	7.97e-11	6.29e-11	7.81e-11
	M	1.07e-09	5.42e-10	2.68e-10	1.96e-10	1.31e-10	1.15e-10	1.30e-10
	S	1.10e-09	5.54e-10	2.75e-10	2.00e-10	1.38e-10	1.22e-10	1.37e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Se-73m	F	8.95e-11	5.11e-11	2.43e-11	1.82e-11	9.93e-12	7.80e-12	9.50e-12
	M	1.17e-10	6.16e-11	3.04e-11	2.25e-11	1.51e-11	1.28e-11	1.46e-11
	S	1.20e-10	6.27e-11	3.10e-11	2.29e-11	1.57e-11	1.34e-11	1.52e-11
Se-75	F	9.67e-09	5.98e-09	3.27e-09	2.29e-09	1.23e-09	1.18e-09	1.36e-09
	M	6.35e-09	4.14e-09	2.39e-09	1.66e-09	1.12e-09	1.21e-09	1.30e-09
	S	6.93e-09	4.88e-09	2.88e-09	2.02e-09	1.51e-09	1.70e-09	1.77e-09
Se-79	F	1.54e-08	9.64e-09	5.20e-09	3.51e-09	1.21e-09	9.23e-10	1.30e-09
	M	1.23e-08	6.74e-09	3.94e-09	2.60e-09	1.55e-09	1.39e-09	1.60e-09
	S	3.15e-08	2.60e-08	1.90e-08	1.46e-08	1.39e-08	1.41e-08	1.44e-08
Se-81	F	7.77e-11	4.51e-11	2.13e-11	1.61e-11	1.08e-11	8.37e-12	9.77e-12
	M	9.05e-11	5.25e-11	2.56e-11	1.94e-11	1.36e-11	1.07e-11	1.23e-11
	S	9.08e-11	5.27e-11	2.57e-11	1.95e-11	1.37e-11	1.07e-11	1.23e-11
Se-81m	F	2.18e-10	1.18e-10	5.57e-11	4.19e-11	2.72e-11	2.02e-11	2.41e-11
	M	3.14e-10	1.57e-10	8.07e-11	6.12e-11	4.67e-11	3.62e-11	4.11e-11
	S	3.18e-10	1.58e-10	8.15e-11	6.18e-11	4.75e-11	3.68e-11	4.17e-11
Se-83	F	1.27e-10	7.30e-11	3.45e-11	2.59e-11	1.71e-11	1.42e-11	1.63e-11
	M	1.64e-10	9.01e-11	4.50e-11	3.38e-11	2.42e-11	2.03e-11	2.29e-11
	S	1.66e-10	9.07e-11	4.54e-11	3.41e-11	2.45e-11	2.05e-11	2.31e-11
Bromine								
Br-74	F	1.81e-10	1.07e-10	5.15e-11	3.93e-11	2.48e-11	2.02e-11	2.35e-11
	M	2.18e-10	1.28e-10	6.34e-11	4.83e-11	3.14e-11	2.63e-11	3.01e-11
	S	2.19e-10	1.29e-10	6.38e-11	4.85e-11	3.16e-11	2.65e-11	3.03e-11
Br-74m	F	3.27e-10	1.93e-10	9.18e-11	7.00e-11	4.32e-11	3.40e-11	4.01e-11
	M	4.21e-10	2.44e-10	1.20e-10	9.13e-11	5.90e-11	4.89e-11	5.63e-11
	S	4.25e-10	2.46e-10	1.21e-10	9.20e-11	5.96e-11	4.94e-11	5.68e-11
Br-75	F	2.66e-10	1.53e-10	7.01e-11	5.29e-11	3.26e-11	2.49e-11	2.98e-11
	M	3.68e-10	2.04e-10	1.00e-10	7.55e-11	5.11e-11	4.18e-11	4.79e-11
	S	3.74e-10	2.07e-10	1.02e-10	7.68e-11	5.22e-11	4.30e-11	4.92e-11
Br-76	F	1.72e-09	9.97e-10	4.72e-10	3.27e-10	1.97e-10	1.63e-10	1.93e-10
	M	2.92e-09	1.64e-09	8.06e-10	5.79e-10	3.78e-10	3.54e-10	3.97e-10
	S	3.12e-09	1.75e-09	8.63e-10	6.22e-10	4.08e-10	3.87e-10	4.32e-10
Br-77	F	2.98e-10	1.81e-10	9.21e-11	6.18e-11	3.84e-11	3.61e-11	4.10e-11
	M	4.08e-10	2.61e-10	1.33e-10	9.42e-11	6.12e-11	6.30e-11	6.89e-11
	S	4.32e-10	2.79e-10	1.42e-10	1.01e-10	6.63e-11	6.90e-11	7.51e-11
Br-80	F	8.08e-11	4.72e-11	2.22e-11	1.69e-11	1.12e-11	8.56e-12	1.00e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Br-80m	M	9.54e-11	5.55e-11	2.69e-11	2.05e-11	1.41e-11	1.09e-11	1.26e-11
	S	9.58e-11	5.57e-11	2.71e-11	2.06e-11	1.41e-11	1.10e-11	1.27e-11
	F	5.71e-10	3.08e-10	1.32e-10	9.67e-11	5.71e-11	3.92e-11	4.95e-11
	M	1.01e-09	4.69e-10	2.31e-10	1.70e-10	1.18e-10	9.43e-11	1.09e-10
Br-82	S	1.05e-09	4.82e-10	2.39e-10	1.76e-10	1.23e-10	9.94e-11	1.14e-10
	F	1.78e-09	1.07e-09	5.39e-10	3.63e-10	2.26e-10	2.09e-10	2.38e-10
	M	3.22e-09	1.73e-09	9.02e-10	6.38e-10	4.37e-10	4.35e-10	4.76e-10
Br-83	S	3.50e-09	1.86e-09	9.74e-10	6.93e-10	4.79e-10	4.80e-10	5.23e-10
	F	2.00e-10	1.12e-10	4.92e-11	3.62e-11	2.39e-11	1.80e-11	2.14e-11
	M	3.28e-10	1.63e-10	8.13e-11	6.05e-11	4.61e-11	3.65e-11	4.14e-11
Br-84	S	3.36e-10	1.65e-10	8.31e-11	6.18e-11	4.74e-11	3.76e-11	4.26e-11
	F	2.09e-10	1.23e-10	5.86e-11	4.47e-11	2.83e-11	2.16e-11	2.56e-11
	M	2.62e-10	1.52e-10	7.46e-11	5.69e-11	3.75e-11	2.98e-11	3.45e-11
	S	2.64e-10	1.53e-10	7.50e-11	5.72e-11	3.78e-11	3.01e-11	3.49e-11
Rubidium								
Rb-78	F	1.44e-10	8.52e-11	4.09e-11	3.12e-11	1.98e-11	1.61e-11	1.87e-11
	M	1.69e-10	9.92e-11	4.86e-11	3.71e-11	2.41e-11	2.00e-11	2.30e-11
	S	1.69e-10	9.96e-11	4.88e-11	3.72e-11	2.42e-11	2.01e-11	2.31e-11
Rb-79	F	1.30e-10	7.55e-11	3.61e-11	2.74e-11	1.82e-11	1.44e-11	1.67e-11
	M	1.58e-10	9.10e-11	4.50e-11	3.42e-11	2.37e-11	1.91e-11	2.18e-11
	S	1.59e-10	9.14e-11	4.52e-11	3.44e-11	2.38e-11	1.92e-11	2.20e-11
Rb-81	F	2.22e-10	1.27e-10	5.70e-11	4.09e-11	2.61e-11	2.14e-11	2.51e-11
	M	3.95e-10	2.01e-10	1.01e-10	7.39e-11	5.42e-11	4.68e-11	5.23e-11
	S	4.12e-10	2.08e-10	1.05e-10	7.68e-11	5.66e-11	4.91e-11	5.48e-11
Rb-81m	F	4.98e-11	2.29e-11	1.16e-11	8.40e-12	6.64e-12	5.41e-12	6.07e-12
	M	8.85e-11	3.68e-11	2.02e-11	1.49e-11	1.26e-11	1.06e-11	1.16e-11
	S	9.11e-11	3.77e-11	2.08e-11	1.53e-11	1.30e-11	1.09e-11	1.20e-11
Rb-82m	F	4.45e-10	2.65e-10	1.29e-10	9.16e-11	5.63e-11	5.17e-11	5.89e-11
	M	7.12e-10	4.38e-10	2.16e-10	1.57e-10	1.01e-10	9.98e-11	1.10e-10
	S	7.48e-10	4.63e-10	2.28e-10	1.65e-10	1.07e-10	1.06e-10	1.17e-10
Rb-83	F	2.28e-09	1.77e-09	1.26e-09	1.01e-09	6.99e-10	7.03e-10	7.47e-10
	M	4.10e-09	2.93e-09	1.76e-09	1.26e-09	9.16e-10	1.02e-09	1.07e-09
	S	5.97e-09	4.33e-09	2.54e-09	1.76e-09	1.30e-09	1.49e-09	1.55e-09
Rb-84	F	5.44e-09	3.96e-09	2.35e-09	1.66e-09	1.07e-09	1.00e-09	1.11e-09
	M	1.04e-08	6.00e-09	3.44e-09	2.36e-09	1.73e-09	1.79e-09	1.92e-09

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Rb-84m	S	1.31e-08	7.38e-09	4.20e-09	2.87e-09	2.15e-09	2.26e-09	2.41e-09
	F	2.41e-11	1.47e-11	7.49e-12	5.53e-12	4.04e-12	3.47e-12	3.87e-12
	M	3.19e-11	1.87e-11	9.71e-12	7.17e-12	5.52e-12	4.81e-12	5.30e-12
Rb-86	S	3.33e-11	1.94e-11	1.01e-11	7.43e-12	5.74e-12	5.04e-12	5.54e-12
	F	8.20e-09	5.62e-09	2.67e-09	1.61e-09	9.00e-10	7.31e-10	8.99e-10
	M	1.92e-08	9.43e-09	5.20e-09	3.46e-09	2.58e-09	2.47e-09	2.70e-09
Rb-87	S	2.34e-08	1.11e-08	6.28e-09	4.23e-09	3.24e-09	3.15e-09	3.41e-09
	F	2.45e-09	1.86e-09	1.04e-09	7.23e-10	4.17e-10	3.85e-10	4.40e-10
	M	1.51e-08	7.96e-09	4.63e-09	3.07e-09	2.36e-09	2.24e-09	2.43e-09
Rb-88	S	7.04e-08	6.15e-08	4.65e-08	3.64e-08	3.56e-08	3.64e-08	3.69e-08
	F	1.79e-10	1.05e-10	5.00e-11	3.82e-11	2.43e-11	1.85e-11	2.19e-11
	M	2.12e-10	1.24e-10	6.00e-11	4.59e-11	2.98e-11	2.34e-11	2.73e-11
Rb-89	S	2.13e-10	1.24e-10	6.02e-11	4.61e-11	2.99e-11	2.35e-11	2.74e-11
	F	1.05e-10	6.03e-11	2.85e-11	2.15e-11	1.43e-11	1.13e-11	1.31e-11
	M	1.22e-10	7.04e-11	3.46e-11	2.61e-11	1.76e-11	1.45e-11	1.66e-11
	S	1.24e-10	7.18e-11	3.54e-11	2.67e-11	1.81e-11	1.50e-11	1.71e-11
Strontium								
Sr-80	F	8.43e-10	4.89e-10	2.23e-10	1.67e-10	1.03e-10	7.55e-11	9.15e-11
	M	1.16e-09	6.42e-10	3.10e-10	2.34e-10	1.52e-10	1.21e-10	1.41e-10
	S	1.18e-09	6.50e-10	3.14e-10	2.37e-10	1.55e-10	1.24e-10	1.44e-10
Sr-81	F	1.54e-10	8.96e-11	4.21e-11	3.19e-11	2.05e-11	1.61e-11	1.89e-11
	M	1.93e-10	1.10e-10	5.37e-11	4.07e-11	2.74e-11	2.22e-11	2.55e-11
	S	1.95e-10	1.10e-10	5.43e-11	4.12e-11	2.77e-11	2.25e-11	2.58e-11
Sr-82	F	4.17e-08	1.52e-08	6.10e-09	3.93e-09	3.93e-09	1.47e-09	2.10e-09
	M	5.47e-08	2.63e-08	1.44e-08	9.78e-09	7.69e-09	7.23e-09	7.86e-09
	S	6.41e-08	3.26e-08	1.85e-08	1.26e-08	9.69e-09	9.82e-09	1.05e-08
Sr-83	F	9.40e-10	5.32e-10	2.43e-10	1.68e-10	1.10e-10	9.36e-11	1.08e-10
	M	1.53e-09	8.20e-10	4.19e-10	2.96e-10	2.01e-10	1.94e-10	2.14e-10
	S	1.67e-09	8.95e-10	4.63e-10	3.27e-10	2.24e-10	2.20e-10	2.42e-10
Sr-85	F	4.71e-09	1.68e-09	8.21e-10	6.80e-10	6.24e-10	2.72e-10	3.55e-10
	M	4.26e-09	2.59e-09	1.46e-09	1.04e-09	7.97e-10	7.93e-10	8.48e-10
	S	5.09e-09	3.58e-09	2.08e-09	1.44e-09	1.06e-09	1.21e-09	1.26e-09
Sr-85m	F	1.33e-11	7.16e-12	3.50e-12	2.64e-12	1.84e-12	1.57e-12	1.77e-12
	M	1.57e-11	9.24e-12	4.80e-12	3.54e-12	2.50e-12	2.42e-12	2.64e-12
	S	1.63e-11	9.92e-12	5.23e-12	3.82e-12	2.69e-12	2.71e-12	2.93e-12

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Sr-87m	F	6.96e-11	4.01e-11	1.80e-11	1.31e-11	8.40e-12	7.24e-12	8.35e-12
	M	1.01e-10	5.49e-11	2.69e-11	1.99e-11	1.41e-11	1.23e-11	1.38e-11
	S	1.03e-10	5.59e-11	2.75e-11	2.03e-11	1.44e-11	1.26e-11	1.41e-11
Sr-89	F	2.79e-08	9.18e-09	3.21e-09	2.04e-09	2.31e-09	7.01e-10	1.08e-09
	M	3.32e-08	1.55e-08	8.42e-09	5.62e-09	4.56e-09	4.04e-09	4.44e-09
	S	4.09e-08	2.11e-08	1.21e-08	8.14e-09	6.33e-09	6.16e-09	6.64e-09
Sr-90	F	2.48e-07	8.91e-08	4.08e-08	6.11e-08	9.36e-08	2.50e-08	3.30e-08
	M	1.81e-07	9.62e-08	5.53e-08	5.04e-08	5.88e-08	3.21e-08	3.64e-08
	S	6.56e-07	6.04e-07	4.78e-07	3.90e-07	3.97e-07	4.14e-07	4.15e-07
Sr-91	F	1.42e-09	7.86e-10	3.29e-10	2.18e-10	1.46e-10	1.04e-10	1.28e-10
	M	2.04e-09	1.05e-09	5.17e-10	3.68e-10	2.56e-10	2.22e-10	2.51e-10
	S	2.18e-09	1.11e-09	5.61e-10	4.02e-10	2.81e-10	2.50e-10	2.80e-10
Sr-92	F	7.50e-10	4.16e-10	1.79e-10	1.27e-10	8.11e-11	5.98e-11	7.27e-11
	M	1.21e-09	6.02e-10	2.93e-10	2.14e-10	1.49e-10	1.25e-10	1.42e-10
	S	1.26e-09	6.20e-10	3.03e-10	2.22e-10	1.55e-10	1.32e-10	1.50e-10
Yttrium								
Y-84m	F	3.66e-10	2.13e-10	1.05e-10	7.95e-11	5.12e-11	4.24e-11	4.89e-11
	M	3.69e-10	2.14e-10	1.05e-10	8.02e-11	5.18e-11	4.29e-11	4.94e-11
	S	3.70e-10	2.15e-10	1.06e-10	8.04e-11	5.19e-11	4.30e-11	4.95e-11
Y-85	F	5.26e-10	2.88e-10	1.39e-10	1.04e-10	7.02e-11	5.80e-11	6.65e-11
	M	5.44e-10	2.97e-10	1.45e-10	1.08e-10	7.33e-11	6.15e-11	7.01e-11
	S	5.50e-10	3.00e-10	1.47e-10	1.10e-10	7.43e-11	6.28e-11	7.15e-11
Y-85m	F	8.84e-10	4.83e-10	2.32e-10	1.72e-10	1.13e-10	9.41e-11	1.08e-10
	M	9.36e-10	5.06e-10	2.46e-10	1.83e-10	1.21e-10	1.03e-10	1.18e-10
	S	9.52e-10	5.14e-10	2.51e-10	1.86e-10	1.24e-10	1.06e-10	1.21e-10
Y-86	F	1.78e-09	1.15e-09	5.60e-10	4.04e-10	2.56e-10	2.47e-10	2.76e-10
	M	1.98e-09	1.24e-09	6.12e-10	4.43e-10	2.84e-10	2.80e-10	3.10e-10
	S	2.03e-09	1.26e-09	6.25e-10	4.52e-10	2.91e-10	2.88e-10	3.18e-10
Y-86m	F	1.06e-10	6.84e-11	3.33e-11	2.41e-11	1.55e-11	1.49e-11	1.66e-11
	M	1.18e-10	7.34e-11	3.63e-11	2.63e-11	1.71e-11	1.68e-11	1.86e-11
	S	1.20e-10	7.46e-11	3.71e-11	2.69e-11	1.75e-11	1.73e-11	1.91e-11
Y-87	F	1.09e-09	7.23e-10	3.53e-10	2.41e-10	1.59e-10	1.53e-10	1.70e-10
	M	1.60e-09	9.44e-10	4.87e-10	3.41e-10	2.31e-10	2.35e-10	2.56e-10
	S	1.74e-09	1.00e-09	5.23e-10	3.68e-10	2.50e-10	2.57e-10	2.79e-10
Y-87m	F	4.54e-10	2.71e-10	1.31e-10	9.19e-11	6.23e-11	5.69e-11	6.39e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Y-88	M	5.97e-10	3.27e-10	1.66e-10	1.17e-10	8.10e-11	7.79e-11	8.59e-11
	S	6.34e-10	3.42e-10	1.75e-10	1.24e-10	8.60e-11	8.35e-11	9.18e-11
	F	1.39e-08	1.08e-08	6.75e-09	4.19e-09	3.52e-09	3.64e-09	3.83e-09
	M	1.98e-08	1.47e-08	8.96e-09	6.05e-09	4.68e-09	5.32e-09	5.53e-09
Y-90	S	2.57e-08	1.92e-08	1.16e-08	8.16e-09	6.11e-09	7.26e-09	7.49e-09
	F	4.50e-09	2.43e-09	1.15e-09	7.49e-10	5.18e-10	4.10e-10	4.82e-10
	M	7.13e-09	3.36e-09	1.75e-09	1.20e-09	8.61e-10	7.90e-10	8.79e-10
	S	7.82e-09	3.61e-09	1.91e-09	1.33e-09	9.53e-10	8.91e-10	9.85e-10
Y-90m	F	3.08e-10	1.72e-10	8.20e-11	5.52e-11	3.78e-11	3.24e-11	3.71e-11
	M	4.48e-10	2.22e-10	1.14e-10	7.95e-11	5.61e-11	5.27e-11	5.84e-11
	S	4.84e-10	2.35e-10	1.23e-10	8.59e-11	6.10e-11	5.81e-11	6.40e-11
	F	1.85e-08	1.22e-08	5.35e-09	2.53e-09	2.43e-09	1.29e-09	1.67e-09
Y-91	M	3.58e-08	1.93e-08	1.05e-08	6.64e-09	5.34e-09	4.80e-09	5.28e-09
	S	4.62e-08	2.45e-08	1.41e-08	9.47e-09	7.38e-09	7.20e-09	7.76e-09
	F	3.52e-11	2.16e-11	1.03e-11	6.80e-12	4.88e-12	4.03e-12	4.62e-12
	M	4.56e-11	2.59e-11	1.34e-11	9.28e-12	6.64e-12	6.15e-12	6.80e-12
Y-92	S	5.18e-11	2.89e-11	1.55e-11	1.10e-11	7.85e-12	7.57e-12	8.27e-12
	F	1.33e-09	7.07e-10	3.36e-10	2.52e-10	1.66e-10	1.29e-10	1.51e-10
	M	1.40e-09	7.31e-10	3.50e-10	2.62e-10	1.74e-10	1.38e-10	1.61e-10
	S	1.41e-09	7.36e-10	3.54e-10	2.65e-10	1.76e-10	1.40e-10	1.63e-10
Y-93	F	2.28e-09	1.18e-09	5.59e-10	4.05e-10	2.67e-10	2.14e-10	2.50e-10
	M	2.59e-09	1.29e-09	6.25e-10	4.55e-10	3.05e-10	2.55e-10	2.93e-10
	S	2.66e-09	1.32e-09	6.42e-10	4.67e-10	3.15e-10	2.65e-10	3.04e-10
	F	2.04e-10	1.19e-10	5.77e-11	4.41e-11	2.86e-11	2.24e-11	2.62e-11
Y-94	M	2.05e-10	1.20e-10	5.80e-11	4.44e-11	2.88e-11	2.26e-11	2.64e-11
	S	2.05e-10	1.20e-10	5.81e-11	4.44e-11	2.89e-11	2.26e-11	2.64e-11
	F	9.58e-11	5.58e-11	2.68e-11	2.03e-11	1.36e-11	1.10e-11	1.27e-11
	M	9.70e-11	5.63e-11	2.72e-11	2.06e-11	1.38e-11	1.12e-11	1.29e-11
Zirconium	S	9.77e-11	5.67e-11	2.75e-11	2.08e-11	1.39e-11	1.13e-11	1.30e-11
	F	1.39e-09	9.53e-10	4.52e-10	3.18e-10	1.98e-10	1.88e-10	2.12e-10
	M	1.82e-09	1.19e-09	5.94e-10	4.25e-10	2.73e-10	2.77e-10	3.04e-10
	S	1.92e-09	1.24e-09	6.24e-10	4.47e-10	2.88e-10	2.95e-10	3.23e-10
Zr-87	F	4.24e-10	2.46e-10	1.11e-10	8.34e-11	5.15e-11	3.96e-11	4.73e-11
	M	5.69e-10	3.13e-10	1.53e-10	1.15e-10	7.66e-11	6.23e-11	7.18e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Zr-88	S	5.81e-10	3.19e-10	1.56e-10	1.17e-10	7.85e-11	6.41e-11	7.37e-11
	F	2.05e-08	1.63e-08	9.72e-09	6.04e-09	4.93e-09	5.11e-09	5.40e-09
	M	1.39e-08	1.09e-08	6.78e-09	4.46e-09	3.64e-09	4.07e-09	4.21e-09
Zr-89	S	1.88e-08	1.49e-08	9.28e-09	6.48e-09	4.99e-09	5.89e-09	6.06e-09
	F	1.81e-09	1.15e-09	5.44e-10	3.73e-10	2.43e-10	2.29e-10	2.58e-10
	M	2.29e-09	1.35e-09	7.00e-10	4.93e-10	3.34e-10	3.39e-10	3.70e-10
Zr-93	S	2.47e-09	1.43e-09	7.47e-10	5.27e-10	3.59e-10	3.68e-10	4.00e-10
	F	9.42e-09	8.50e-09	5.64e-09	5.00e-09	4.99e-09	5.29e-09	5.30e-09
	M	5.15e-09	4.22e-09	2.93e-09	2.44e-09	2.55e-09	2.75e-09	2.74e-09
Zr-95	S	1.30e-08	1.23e-08	9.72e-09	7.85e-09	7.79e-09	7.89e-09	7.98e-09
	F	1.95e-08	1.38e-08	6.66e-09	3.71e-09	3.06e-09	2.70e-09	3.02e-09
	M	1.97e-08	1.16e-08	6.54e-09	4.24e-09	3.36e-09	3.45e-09	3.68e-09
Zr-97	S	2.53e-08	1.47e-08	8.61e-09	5.87e-09	4.47e-09	4.82e-09	5.09e-09
	F	2.87e-09	1.68e-09	7.40e-10	5.15e-10	3.11e-10	2.58e-10	3.06e-10
	M	4.53e-09	2.26e-09	1.13e-09	8.04e-10	5.47e-10	4.89e-10	5.51e-10
	S	4.84e-09	2.36e-09	1.19e-09	8.50e-10	5.85e-10	5.27e-10	5.92e-10
Niobium								
Nb-88	F	1.53e-10	8.69e-11	4.20e-11	3.18e-11	2.08e-11	1.73e-11	1.99e-11
	M	1.71e-10	9.72e-11	4.80e-11	3.64e-11	2.42e-11	2.03e-11	2.32e-11
	S	1.73e-10	9.79e-11	4.85e-11	3.68e-11	2.44e-11	2.06e-11	2.35e-11
Nb-89	F	5.89e-10	3.41e-10	1.55e-10	1.17e-10	7.16e-11	5.55e-11	6.62e-11
	M	7.87e-10	4.35e-10	2.12e-10	1.59e-10	1.04e-10	8.52e-11	9.84e-11
	S	8.03e-10	4.42e-10	2.16e-10	1.62e-10	1.07e-10	8.75e-11	1.01e-10
Nb-89m	F	3.32e-10	1.93e-10	8.97e-11	6.78e-11	4.22e-11	3.38e-11	3.97e-11
	M	4.19e-10	2.38e-10	1.17e-10	8.85e-11	5.85e-11	4.84e-11	5.55e-11
	S	4.25e-10	2.41e-10	1.19e-10	8.96e-11	5.94e-11	4.94e-11	5.66e-11
Nb-90	F	1.92e-09	1.21e-09	5.65e-10	4.15e-10	2.54e-10	2.34e-10	2.66e-10
	M	2.75e-09	1.59e-09	7.93e-10	5.74e-10	3.80e-10	3.64e-10	4.04e-10
	S	2.88e-09	1.64e-09	8.24e-10	5.95e-10	3.97e-10	3.82e-10	4.23e-10
Nb-91	F	6.93e-10	5.75e-10	3.34e-10	2.62e-10	2.88e-10	3.63e-10	3.54e-10
	M	1.38e-09	1.07e-09	6.03e-10	4.10e-10	3.45e-10	3.71e-10	3.86e-10
	S	9.52e-09	9.47e-09	7.53e-09	6.15e-09	6.15e-09	6.27e-09	6.32e-09
Nb-91m	F	2.27e-09	1.46e-09	6.41e-10	3.44e-10	2.64e-10	1.86e-10	2.27e-10
	M	9.33e-09	3.77e-09	2.14e-09	1.40e-09	1.12e-09	1.03e-09	1.13e-09
	S	1.28e-08	5.37e-09	3.09e-09	2.05e-09	1.62e-09	1.51e-09	1.65e-09

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Nb-92	F	1.93e-08	1.74e-08	1.43e-08	1.56e-08	2.22e-08	3.04e-08	2.85e-08
	M	2.32e-08	1.91e-08	1.36e-08	1.19e-08	1.44e-08	1.91e-08	1.83e-08
	S	1.64e-07	1.68e-07	1.43e-07	1.23e-07	1.29e-07	1.36e-07	1.35e-07
Nb-92m	F	1.55e-09	1.03e-09	5.26e-10	3.72e-10	2.45e-10	2.44e-10	2.68e-10
	M	2.05e-09	1.42e-09	7.63e-10	5.38e-10	3.66e-10	4.03e-10	4.30e-10
	S	2.29e-09	1.58e-09	8.58e-10	6.05e-10	4.14e-10	4.62e-10	4.91e-10
Nb-93m	F	1.56e-09	1.27e-09	6.75e-10	4.63e-10	4.88e-10	5.11e-10	5.20e-10
	M	2.68e-09	1.82e-09	1.01e-09	6.56e-10	5.56e-10	5.54e-10	5.87e-10
	S	9.92e-09	8.74e-09	5.92e-09	4.22e-09	3.87e-09	3.99e-09	4.10e-09
Nb-94	F	3.14e-08	2.81e-08	2.03e-08	2.03e-08	2.72e-08	3.57e-08	3.38e-08
	M	4.58e-08	3.29e-08	2.18e-08	1.77e-08	1.96e-08	2.45e-08	2.39e-08
	S	2.65e-07	2.59e-07	2.14e-07	1.80e-07	1.86e-07	1.94e-07	1.94e-07
Nb-95	F	2.90e-09	1.92e-09	9.98e-10	6.56e-10	4.68e-10	4.60e-10	5.03e-10
	M	6.49e-09	3.35e-09	1.93e-09	1.32e-09	9.91e-10	1.06e-09	1.12e-09
	S	8.26e-09	4.28e-09	2.48e-09	1.71e-09	1.28e-09	1.39e-09	1.47e-09
Nb-95m	F	1.05e-09	6.33e-10	2.92e-10	1.86e-10	1.25e-10	1.08e-10	1.25e-10
	M	2.86e-09	1.20e-09	6.66e-10	4.51e-10	3.49e-10	3.31e-10	3.61e-10
	S	3.41e-09	1.41e-09	7.95e-10	5.40e-10	4.19e-10	4.03e-10	4.38e-10
Nb-96	F	1.71e-09	1.09e-09	5.08e-10	3.68e-10	2.28e-10	2.13e-10	2.41e-10
	M	2.72e-09	1.49e-09	7.55e-10	5.41e-10	3.67e-10	3.56e-10	3.93e-10
	S	2.91e-09	1.55e-09	7.96e-10	5.69e-10	3.90e-10	3.80e-10	4.18e-10
Nb-97	F	1.97e-10	1.13e-10	5.18e-11	3.89e-11	2.53e-11	1.99e-11	2.33e-11
	M	2.67e-10	1.46e-10	7.21e-11	5.44e-11	3.89e-11	3.11e-11	3.55e-11
	S	2.70e-10	1.47e-10	7.30e-11	5.50e-11	3.94e-11	3.16e-11	3.60e-11
Nb-98m	F	2.66e-10	1.54e-10	7.25e-11	5.51e-11	3.48e-11	2.83e-11	3.30e-11
	M	3.29e-10	1.88e-10	9.29e-11	7.04e-11	4.71e-11	3.91e-11	4.47e-11
	S	3.31e-10	1.89e-10	9.36e-11	7.09e-11	4.76e-11	3.95e-11	4.51e-11
Molybdenum								
Mo-90	F	9.31e-10	5.53e-10	2.59e-10	1.89e-10	1.17e-10	1.08e-10	1.23e-10
	M	1.49e-09	8.15e-10	4.12e-10	2.97e-10	2.03e-10	1.92e-10	2.13e-10
	S	1.58e-09	8.54e-10	4.34e-10	3.12e-10	2.15e-10	2.04e-10	2.25e-10
Mo-91	F	1.29e-10	7.52e-11	3.53e-11	2.70e-11	1.72e-11	1.34e-11	1.58e-11
	M	1.45e-10	8.49e-11	4.09e-11	3.13e-11	2.04e-11	1.61e-11	1.88e-11
	S	1.46e-10	8.51e-11	4.11e-11	3.14e-11	2.04e-11	1.61e-11	1.88e-11
Mo-93	F	8.46e-10	5.15e-10	2.42e-10	1.56e-10	8.92e-11	8.97e-11	1.03e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Mo-93m	M	1.39e-09	1.02e-09	5.51e-10	3.56e-10	2.48e-10	2.37e-10	2.62e-10
	S	1.25e-08	1.28e-08	1.05e-08	8.73e-09	8.83e-09	8.97e-09	9.03e-09
	F	4.60e-10	2.78e-10	1.37e-10	1.02e-10	6.38e-11	6.19e-11	6.90e-11
	M	6.73e-10	3.96e-10	1.99e-10	1.45e-10	9.70e-11	9.46e-11	1.04e-10
Mo-99	S	6.99e-10	4.12e-10	2.06e-10	1.50e-10	1.01e-10	9.85e-11	1.08e-10
	F	2.07e-09	1.17e-09	5.28e-10	3.65e-10	2.14e-10	1.90e-10	2.23e-10
	M	4.15e-09	1.79e-09	9.54e-10	6.56e-10	4.79e-10	4.43e-10	4.91e-10
Mo-101	S	4.61e-09	1.93e-09	1.04e-09	7.18e-10	5.35e-10	4.97e-10	5.48e-10
	F	1.22e-10	7.12e-11	3.40e-11	2.52e-11	1.71e-11	1.37e-11	1.58e-11
	M	1.40e-10	8.04e-11	3.99e-11	3.02e-11	2.15e-11	1.74e-11	1.98e-11
Mo-102	S	1.40e-10	8.06e-11	4.00e-11	3.03e-11	2.16e-11	1.75e-11	1.99e-11
	F	1.51e-10	8.81e-11	4.14e-11	3.14e-11	2.09e-11	1.64e-11	1.91e-11
	M	1.70e-10	9.86e-11	4.74e-11	3.61e-11	2.44e-11	1.94e-11	2.24e-11
	S	1.70e-10	9.89e-11	4.76e-11	3.62e-11	2.45e-11	1.94e-11	2.24e-11
Technetium								
Tc-93	F	1.44e-10	9.00e-11	4.34e-11	3.04e-11	1.92e-11	1.76e-11	2.00e-11
	M	1.67e-10	1.00e-10	5.00e-11	3.64e-11	2.37e-11	2.34e-11	2.58e-11
Tc-93m	S	1.67e-10	1.00e-10	5.01e-11	3.66e-11	2.39e-11	2.37e-11	2.61e-11
	F	7.28e-11	4.49e-11	2.12e-11	1.47e-11	9.34e-12	8.16e-12	9.40e-12
	M	8.60e-11	5.08e-11	2.53e-11	1.87e-11	1.26e-11	1.16e-11	1.29e-11
Tc-94	S	8.62e-11	5.08e-11	2.54e-11	1.88e-11	1.27e-11	1.17e-11	1.30e-11
	F	3.98e-10	2.63e-10	1.27e-10	8.98e-11	5.69e-11	5.28e-11	5.96e-11
	M	4.74e-10	2.98e-10	1.47e-10	1.06e-10	6.78e-11	6.83e-11	7.53e-11
Tc-94m	S	4.80e-10	3.01e-10	1.48e-10	1.08e-10	6.86e-11	6.95e-11	7.65e-11
	F	2.48e-10	1.49e-10	6.95e-11	4.84e-11	3.03e-11	2.29e-11	2.76e-11
	M	2.90e-10	1.66e-10	8.15e-11	6.19e-11	4.05e-11	3.29e-11	3.80e-11
Tc-95	S	2.90e-10	1.66e-10	8.15e-11	6.20e-11	4.06e-11	3.31e-11	3.82e-11
	F	3.69e-10	2.68e-10	1.29e-10	9.13e-11	5.72e-11	5.38e-11	6.06e-11
	M	4.34e-10	3.07e-10	1.50e-10	1.08e-10	6.71e-11	6.86e-11	7.57e-11
Tc-95m	S	4.44e-10	3.13e-10	1.53e-10	1.11e-10	6.85e-11	7.09e-11	7.80e-11
	F	1.45e-09	8.15e-10	3.95e-10	2.73e-10	1.70e-10	1.63e-10	1.84e-10
	M	4.72e-09	3.11e-09	1.76e-09	1.23e-09	8.88e-10	1.00e-09	1.05e-09
Tc-96	S	6.85e-09	4.69e-09	2.72e-09	1.89e-09	1.39e-09	1.59e-09	1.66e-09
	F	2.43e-09	1.68e-09	8.31e-10	5.89e-10	3.70e-10	3.58e-10	4.00e-10
	M	3.24e-09	2.26e-09	1.17e-09	8.39e-10	5.48e-10	5.95e-10	6.41e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Tc-96m	S	3.43e-09	2.41e-09	1.26e-09	9.03e-10	5.93e-10	6.54e-10	7.01e-10
	F	2.74e-11	1.78e-11	8.64e-12	5.84e-12	3.70e-12	3.49e-12	3.94e-12
	M	3.47e-11	2.13e-11	1.11e-11	7.90e-12	5.26e-12	5.59e-12	6.04e-12
Tc-97	S	3.63e-11	2.25e-11	1.19e-11	8.42e-12	5.63e-12	6.09e-12	6.55e-12
	F	2.39e-10	1.13e-10	4.87e-11	3.15e-11	1.82e-11	1.45e-11	1.79e-11
	M	1.20e-09	8.83e-10	4.76e-10	3.09e-10	2.16e-10	2.06e-10	2.27e-10
Tc-97m	S	9.60e-09	9.58e-09	7.65e-09	6.27e-09	6.27e-09	6.40e-09	6.45e-09
	F	1.84e-09	6.25e-10	2.46e-10	1.38e-10	8.40e-11	6.77e-11	8.64e-11
	M	9.91e-09	3.87e-09	2.22e-09	1.46e-09	1.16e-09	1.08e-09	1.18e-09
Tc-98	S	1.42e-08	6.26e-09	3.62e-09	2.40e-09	1.88e-09	1.77e-09	1.93e-09
	F	5.27e-09	2.45e-09	1.15e-09	7.83e-10	5.57e-10	5.69e-10	6.22e-10
	M	3.27e-08	2.07e-08	1.23e-08	8.42e-09	6.44e-09	7.05e-09	7.40e-09
Tc-99	S	2.33e-07	2.27e-07	1.87e-07	1.56e-07	1.61e-07	1.69e-07	1.69e-07
	F	2.12e-09	7.14e-10	2.81e-10	1.57e-10	9.90e-11	8.06e-11	1.02e-10
	M	1.34e-08	6.71e-09	3.86e-09	2.55e-09	1.98e-09	1.88e-09	2.04e-09
Tc-99m	S	6.14e-08	5.34e-08	4.03e-08	3.15e-08	3.07e-08	3.13e-08	3.18e-08
	F	5.70e-11	3.20e-11	1.42e-11	9.22e-12	5.98e-12	5.34e-12	6.18e-12
	M	7.87e-11	3.66e-11	1.94e-11	1.40e-11	1.09e-11	9.90e-12	1.08e-11
Tc-101	S	7.98e-11	3.67e-11	1.97e-11	1.44e-11	1.12e-11	1.03e-11	1.12e-11
	F	5.21e-11	3.15e-11	1.44e-11	1.01e-11	6.79e-12	5.32e-12	6.25e-12
	M	6.47e-11	3.77e-11	1.84e-11	1.38e-11	1.00e-11	8.08e-12	9.17e-12
Tc-104	S	6.48e-11	3.78e-11	1.84e-11	1.39e-11	1.00e-11	8.11e-12	9.21e-12
	F	1.59e-10	9.65e-11	4.51e-11	3.25e-11	2.06e-11	1.58e-11	1.88e-11
	M	1.95e-10	1.14e-10	5.55e-11	4.23e-11	2.75e-11	2.21e-11	2.56e-11
	S	1.95e-10	1.14e-10	5.56e-11	4.24e-11	2.76e-11	2.22e-11	2.57e-11
Ruthenium								
Ru-94	F	2.45e-10	1.36e-10	6.39e-11	4.59e-11	2.86e-11	2.22e-11	2.65e-11
	M	2.71e-10	1.50e-10	7.35e-11	5.52e-11	3.61e-11	3.01e-11	3.46e-11
	S	2.72e-10	1.50e-10	7.36e-11	5.54e-11	3.64e-11	3.04e-11	3.49e-11
Ru-95	F	1.23e-10	7.71e-11	3.70e-11	2.71e-11	1.71e-11	1.57e-11	1.77e-11
	M	1.49e-10	9.14e-11	4.51e-11	3.32e-11	2.15e-11	2.06e-11	2.29e-11
	S	1.51e-10	9.25e-11	4.57e-11	3.36e-11	2.18e-11	2.09e-11	2.32e-11
Ru-97	F	3.79e-10	2.47e-10	1.19e-10	8.50e-11	5.55e-11	5.28e-11	5.89e-11
	M	4.42e-10	2.79e-10	1.41e-10	1.01e-10	6.60e-11	6.65e-11	7.30e-11
	S	4.69e-10	2.94e-10	1.49e-10	1.07e-10	7.02e-11	7.13e-11	7.80e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Ru-103	F	4.95e-09	2.85e-09	1.44e-09	9.66e-10	7.08e-10	6.44e-10	7.16e-10
	M	9.75e-09	4.30e-09	2.47e-09	1.66e-09	1.28e-09	1.28e-09	1.38e-09
	S	1.25e-08	5.64e-09	3.25e-09	2.19e-09	1.68e-09	1.72e-09	1.84e-09
Ru-105	F	5.76e-10	3.29e-10	1.48e-10	1.08e-10	7.15e-11	5.78e-11	6.73e-11
	M	9.54e-10	4.44e-10	2.26e-10	1.64e-10	1.21e-10	1.02e-10	1.15e-10
	S	1.01e-09	4.60e-10	2.35e-10	1.71e-10	1.27e-10	1.08e-10	1.21e-10
Ru-106	F	4.72e-08	3.42e-08	1.81e-08	1.07e-08	8.08e-09	6.75e-09	7.68e-09
	M	1.36e-07	8.14e-08	4.84e-08	3.25e-08	2.58e-08	2.58e-08	2.75e-08
	S	2.87e-07	2.00e-07	1.27e-07	8.74e-08	7.19e-08	7.46e-08	7.80e-08
Rhodium								
Rh-97	F	1.14e-10	6.73e-11	3.19e-11	2.41e-11	1.55e-11	1.24e-11	1.45e-11
	M	1.35e-10	7.87e-11	3.87e-11	2.94e-11	1.94e-11	1.60e-11	1.84e-11
	S	1.36e-10	7.91e-11	3.89e-11	2.96e-11	1.96e-11	1.61e-11	1.85e-11
Rh-97m	F	1.01e-10	6.03e-11	2.92e-11	2.19e-11	1.39e-11	1.22e-11	1.39e-11
	M	1.21e-10	7.07e-11	3.55e-11	2.67e-11	1.75e-11	1.57e-11	1.77e-11
	S	1.22e-10	7.13e-11	3.58e-11	2.69e-11	1.77e-11	1.58e-11	1.78e-11
Rh-99	F	2.59e-09	1.56e-09	7.84e-10	5.34e-10	3.78e-10	3.54e-10	3.92e-10
	M	5.02e-09	2.26e-09	1.27e-09	8.70e-10	6.54e-10	6.60e-10	7.11e-10
	S	6.00e-09	2.67e-09	1.52e-09	1.04e-09	7.82e-10	7.98e-10	8.57e-10
Rh-99m	F	1.23e-10	7.59e-11	3.58e-11	2.62e-11	1.67e-11	1.55e-11	1.75e-11
	M	1.60e-10	9.29e-11	4.57e-11	3.32e-11	2.20e-11	2.11e-11	2.34e-11
	S	1.64e-10	9.44e-11	4.65e-11	3.38e-11	2.25e-11	2.16e-11	2.39e-11
Rh-100	F	1.14e-09	7.88e-10	3.83e-10	2.78e-10	1.73e-10	1.70e-10	1.89e-10
	M	1.38e-09	9.55e-10	4.73e-10	3.43e-10	2.16e-10	2.22e-10	2.44e-10
	S	1.43e-09	9.79e-10	4.87e-10	3.53e-10	2.22e-10	2.31e-10	2.53e-10
Rh-101	F	5.11e-09	3.78e-09	2.25e-09	1.50e-09	1.17e-09	1.19e-09	1.26e-09
	M	7.95e-09	5.49e-09	3.30e-09	2.25e-09	1.75e-09	1.89e-09	1.98e-09
	S	2.14e-08	1.79e-08	1.18e-08	8.32e-09	7.33e-09	8.05e-09	8.23e-09
Rh-101m	F	5.92e-10	3.78e-10	1.85e-10	1.30e-10	8.69e-11	8.26e-11	9.19e-11
	M	7.91e-10	4.46e-10	2.33e-10	1.64e-10	1.13e-10	1.14e-10	1.24e-10
	S	8.70e-10	4.82e-10	2.55e-10	1.79e-10	1.24e-10	1.26e-10	1.37e-10
Rh-102	F	8.72e-09	6.00e-09	3.14e-09	1.96e-09	1.41e-09	1.26e-09	1.41e-09
	M	1.97e-08	1.20e-08	6.96e-09	4.66e-09	3.57e-09	3.65e-09	3.89e-09
	S	3.52e-08	2.34e-08	1.42e-08	9.64e-09	7.52e-09	7.87e-09	8.30e-09
Rh-102m	F	2.32e-08	1.82e-08	1.16e-08	8.02e-09	6.50e-09	6.86e-09	7.16e-09

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Rh-103m	M	2.98e-08	2.32e-08	1.47e-08	1.02e-08	8.14e-09	9.35e-09	9.62e-09
	S	8.66e-08	7.80e-08	5.39e-08	3.90e-08	3.64e-08	4.16e-08	4.18e-08
	F	1.39e-11	4.43e-12	2.53e-12	1.75e-12	1.50e-12	1.29e-12	1.42e-12
	M	2.34e-11	5.39e-12	3.44e-12	2.32e-12	2.05e-12	1.81e-12	1.98e-12
Rh-105	S	2.39e-11	5.46e-12	3.49e-12	2.36e-12	2.08e-12	1.84e-12	2.01e-12
	F	6.74e-10	3.80e-10	1.76e-10	1.22e-10	8.78e-11	7.34e-11	8.37e-11
	M	1.51e-09	5.29e-10	2.96e-10	2.04e-10	1.64e-10	1.45e-10	1.60e-10
Rh-106m	S	1.71e-09	5.78e-10	3.28e-10	2.26e-10	1.82e-10	1.62e-10	1.78e-10
	F	3.69e-10	2.18e-10	1.03e-10	7.60e-11	4.95e-11	4.32e-11	4.92e-11
	M	5.03e-10	2.77e-10	1.38e-10	1.02e-10	7.18e-11	6.38e-11	7.12e-11
Rh-107	S	5.12e-10	2.80e-10	1.40e-10	1.04e-10	7.30e-11	6.50e-11	7.25e-11
	F	7.53e-11	4.40e-11	2.08e-11	1.56e-11	1.09e-11	8.70e-12	1.00e-11
	M	9.04e-11	5.20e-11	2.56e-11	1.93e-11	1.41e-11	1.13e-11	1.28e-11
	S	9.09e-11	5.22e-11	2.57e-11	1.94e-11	1.42e-11	1.13e-11	1.28e-11
Palladium								
Pd-98	F	1.49e-10	8.82e-11	4.20e-11	3.21e-11	2.03e-11	1.56e-11	1.84e-11
	M	1.80e-10	1.05e-10	5.19e-11	3.97e-11	2.59e-11	2.06e-11	2.39e-11
	S	1.81e-10	1.05e-10	5.21e-11	3.99e-11	2.60e-11	2.07e-11	2.40e-11
Pd-99	F	8.06e-11	4.77e-11	2.27e-11	1.71e-11	1.12e-11	9.20e-12	1.06e-11
	M	9.67e-11	5.61e-11	2.77e-11	2.09e-11	1.42e-11	1.19e-11	1.35e-11
	S	9.74e-11	5.65e-11	2.79e-11	2.11e-11	1.43e-11	1.20e-11	1.36e-11
Pd-100	F	1.94e-09	1.39e-09	7.10e-10	4.91e-10	3.15e-10	3.23e-10	3.55e-10
	M	3.91e-09	2.14e-09	1.17e-09	8.21e-10	5.75e-10	6.08e-10	6.53e-10
	S	4.46e-09	2.37e-09	1.30e-09	9.14e-10	6.46e-10	6.87e-10	7.36e-10
Pd-101	F	1.51e-10	1.01e-10	4.68e-11	3.35e-11	2.03e-11	1.89e-11	2.15e-11
	M	2.28e-10	1.37e-10	6.72e-11	4.81e-11	3.13e-11	3.01e-11	3.35e-11
	S	2.42e-10	1.43e-10	7.08e-11	5.06e-11	3.31e-11	3.22e-11	3.57e-11
Pd-103	F	4.26e-10	2.42e-10	1.12e-10	6.85e-11	4.37e-11	3.75e-11	4.42e-11
	M	2.18e-09	7.81e-10	4.40e-10	2.88e-10	2.23e-10	2.05e-10	2.27e-10
	S	2.72e-09	9.78e-10	5.53e-10	3.63e-10	2.81e-10	2.59e-10	2.86e-10
Pd-107	F	2.80e-10	1.69e-10	8.68e-11	5.22e-11	3.53e-11	3.11e-11	3.57e-11
	M	5.85e-10	4.24e-10	2.28e-10	1.40e-10	9.91e-11	9.23e-11	1.03e-10
	S	3.64e-09	3.51e-09	2.59e-09	1.97e-09	1.90e-09	1.94e-09	1.97e-09
Pd-109	F	6.72e-10	3.65e-10	1.59e-10	1.12e-10	7.15e-11	5.51e-11	6.61e-11
	M	1.99e-09	7.34e-10	3.95e-10	2.79e-10	2.18e-10	1.86e-10	2.08e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Pd-111	S	2.20e-09	7.89e-10	4.30e-10	3.03e-10	2.39e-10	2.05e-10	2.28e-10
	F	1.36e-10	7.52e-11	3.57e-11	2.69e-11	1.81e-11	1.38e-11	1.62e-11
	M	1.77e-10	9.24e-11	4.63e-11	3.49e-11	2.46e-11	1.94e-11	2.23e-11
Pd-112	S	1.80e-10	9.36e-11	4.71e-11	3.54e-11	2.51e-11	1.98e-11	2.27e-11
	F	2.56e-09	1.53e-09	6.65e-10	4.58e-10	2.70e-10	2.30e-10	2.73e-10
	M	5.35e-09	2.54e-09	1.27e-09	8.83e-10	6.09e-10	5.64e-10	6.31e-10
	S	5.89e-09	2.73e-09	1.38e-09	9.62e-10	6.73e-10	6.28e-10	6.99e-10
Silver								
Ag-101	F	7.56e-11	4.42e-11	2.13e-11	1.62e-11	1.07e-11	8.86e-12	1.02e-11
	M	7.67e-11	4.47e-11	2.16e-11	1.64e-11	1.09e-11	9.01e-12	1.03e-11
	S	7.70e-11	4.49e-11	2.17e-11	1.64e-11	1.09e-11	9.06e-12	1.04e-11
Ag-102	F	9.31e-11	5.48e-11	2.67e-11	2.03e-11	1.33e-11	1.12e-11	1.28e-11
	M	9.34e-11	5.50e-11	2.68e-11	2.04e-11	1.33e-11	1.13e-11	1.29e-11
	S	9.35e-11	5.50e-11	2.68e-11	2.04e-11	1.33e-11	1.13e-11	1.29e-11
Ag-103	F	1.24e-10	6.85e-11	3.42e-11	2.57e-11	1.79e-11	1.51e-11	1.71e-11
	M	1.30e-10	7.08e-11	3.56e-11	2.66e-11	1.87e-11	1.58e-11	1.78e-11
	S	1.32e-10	7.15e-11	3.60e-11	2.69e-11	1.89e-11	1.60e-11	1.81e-11
Ag-104	F	1.38e-10	8.21e-11	4.12e-11	3.05e-11	1.96e-11	1.92e-11	2.12e-11
	M	1.39e-10	8.29e-11	4.16e-11	3.08e-11	1.99e-11	1.94e-11	2.15e-11
	S	1.40e-10	8.31e-11	4.18e-11	3.09e-11	1.99e-11	1.95e-11	2.16e-11
Ag-104m	F	1.82e-10	1.06e-10	5.20e-11	3.96e-11	2.58e-11	2.09e-11	2.42e-11
	M	1.84e-10	1.07e-10	5.24e-11	4.00e-11	2.60e-11	2.11e-11	2.44e-11
	S	1.84e-10	1.07e-10	5.25e-11	4.00e-11	2.61e-11	2.12e-11	2.45e-11
Ag-105	F	2.71e-09	1.69e-09	9.37e-10	6.45e-10	4.63e-10	4.99e-10	5.31e-10
	M	4.11e-09	2.56e-09	1.45e-09	1.00e-09	7.28e-10	8.05e-10	8.50e-10
	S	4.94e-09	3.11e-09	1.76e-09	1.22e-09	8.90e-10	9.91e-10	1.04e-09
Ag-106	F	9.29e-11	5.41e-11	2.64e-11	2.01e-11	1.35e-11	1.08e-11	1.25e-11
	M	9.36e-11	5.45e-11	2.66e-11	2.03e-11	1.36e-11	1.09e-11	1.26e-11
	S	9.37e-11	5.45e-11	2.67e-11	2.03e-11	1.36e-11	1.09e-11	1.26e-11
Ag-106m	F	4.89e-09	3.35e-09	1.79e-09	1.27e-09	8.61e-10	9.30e-10	9.96e-10
	M	5.47e-09	3.77e-09	2.03e-09	1.44e-09	9.82e-10	1.10e-09	1.17e-09
	S	5.69e-09	3.92e-09	2.12e-09	1.50e-09	1.02e-09	1.15e-09	1.22e-09
Ag-108m	F	1.55e-08	9.76e-09	5.68e-09	3.88e-09	2.89e-09	3.16e-09	3.33e-09
	M	3.16e-08	2.29e-08	1.39e-08	9.65e-09	7.40e-09	8.42e-09	8.74e-09
	S	2.19e-07	2.20e-07	1.86e-07	1.58e-07	1.65e-07	1.73e-07	1.72e-07

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Ag-110m	F	2.07e-08	1.30e-08	7.53e-09	5.15e-09	3.84e-09	4.19e-09	4.42e-09
	M	3.68e-08	2.51e-08	1.51e-08	1.04e-08	7.91e-09	9.01e-09	9.37e-09
	S	6.22e-08	4.66e-08	2.90e-08	2.02e-08	1.58e-08	1.82e-08	1.88e-08
Ag-111	F	2.86e-09	1.41e-09	7.07e-10	4.70e-10	3.31e-10	2.85e-10	3.25e-10
	M	6.29e-09	2.64e-09	1.44e-09	9.69e-10	7.37e-10	6.84e-10	7.53e-10
	S	7.30e-09	3.01e-09	1.67e-09	1.12e-09	8.59e-10	8.03e-10	8.81e-10
Ag-112	F	1.18e-09	6.32e-10	3.02e-10	2.27e-10	1.49e-10	1.18e-10	1.38e-10
	M	1.23e-09	6.52e-10	3.13e-10	2.35e-10	1.56e-10	1.25e-10	1.45e-10
	S	1.24e-09	6.56e-10	3.16e-10	2.37e-10	1.58e-10	1.26e-10	1.46e-10
Ag-113	F	1.03e-09	5.26e-10	2.52e-10	1.88e-10	1.27e-10	9.97e-11	1.16e-10
	M	1.11e-09	5.56e-10	2.70e-10	2.01e-10	1.37e-10	1.10e-10	1.27e-10
	S	1.13e-09	5.63e-10	2.75e-10	2.04e-10	1.40e-10	1.12e-10	1.29e-10
Ag-115	F	1.69e-10	9.41e-11	4.60e-11	3.48e-11	2.33e-11	1.83e-11	2.13e-11
	M	1.77e-10	9.80e-11	4.82e-11	3.64e-11	2.46e-11	1.96e-11	2.26e-11
	S	1.79e-10	9.90e-11	4.89e-11	3.68e-11	2.49e-11	1.99e-11	2.30e-11
Cadmium								
Cd-104	F	2.16e-10	1.22e-10	5.71e-11	4.34e-11	2.66e-11	2.09e-11	2.48e-11
	M	3.08e-10	1.64e-10	8.15e-11	6.15e-11	4.10e-11	3.37e-11	3.87e-11
	S	3.12e-10	1.66e-10	8.26e-11	6.22e-11	4.16e-11	3.43e-11	3.93e-11
Cd-105	F	9.31e-11	5.51e-11	2.65e-11	1.99e-11	1.25e-11	1.07e-11	1.23e-11
	M	1.17e-10	6.78e-11	3.38e-11	2.53e-11	1.68e-11	1.46e-11	1.65e-11
	S	1.19e-10	6.87e-11	3.43e-11	2.57e-11	1.71e-11	1.49e-11	1.68e-11
Cd-107	F	1.11e-10	5.25e-11	2.66e-11	1.89e-11	1.42e-11	1.19e-11	1.34e-11
	M	4.57e-10	1.39e-10	8.32e-11	5.88e-11	5.19e-11	4.43e-11	4.84e-11
	S	4.99e-10	1.49e-10	8.96e-11	6.32e-11	5.59e-11	4.78e-11	5.22e-11
Cd-109	F	3.43e-08	1.67e-08	9.72e-09	6.38e-09	4.44e-09	4.24e-09	4.69e-09
	M	2.24e-08	1.13e-08	6.85e-09	4.47e-09	3.47e-09	3.36e-09	3.63e-09
	S	2.62e-08	1.59e-08	9.55e-09	6.34e-09	4.96e-09	4.85e-09	5.21e-09
Cd-111m	F	5.53e-11	3.08e-11	1.57e-11	1.17e-11	9.29e-12	7.78e-12	8.61e-12
	M	8.85e-11	4.48e-11	2.43e-11	1.82e-11	1.57e-11	1.29e-11	1.41e-11
	S	8.98e-11	4.53e-11	2.46e-11	1.85e-11	1.59e-11	1.31e-11	1.43e-11
Cd-113	F	1.68e-07	9.83e-08	7.28e-08	5.99e-08	5.29e-08	5.15e-08	5.33e-08
	M	6.65e-08	4.34e-08	3.37e-08	2.67e-08	2.57e-08	2.57e-08	2.62e-08
	S	6.49e-08	5.72e-08	4.43e-08	3.52e-08	3.45e-08	3.49e-08	3.54e-08
Cd-113m	F	1.94e-07	1.09e-07	7.39e-08	5.65e-08	4.82e-08	4.82e-08	5.02e-08

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Cd-115	M	8.24e-08	5.17e-08	3.65e-08	2.69e-08	2.48e-08	2.53e-08	2.60e-08
	S	8.97e-08	7.51e-08	5.39e-08	4.03e-08	3.85e-08	3.99e-08	4.06e-08
	F	2.62e-09	1.21e-09	5.85e-10	4.02e-10	2.47e-10	2.18e-10	2.54e-10
	M	4.53e-09	1.85e-09	9.92e-10	6.81e-10	5.03e-10	4.61e-10	5.11e-10
Cd-115m	S	4.97e-09	2.02e-09	1.10e-09	7.51e-10	5.62e-10	5.18e-10	5.72e-10
	F	3.26e-08	1.30e-08	6.96e-09	4.57e-09	2.94e-09	2.74e-09	3.12e-09
	M	3.33e-08	1.56e-08	8.92e-09	5.94e-09	4.52e-09	4.39e-09	4.77e-09
	S	3.91e-08	1.99e-08	1.14e-08	7.68e-09	5.95e-09	5.81e-09	6.27e-09
Cd-117	F	5.52e-10	3.10e-10	1.40e-10	1.04e-10	6.46e-11	5.14e-11	6.08e-11
	M	9.15e-10	4.50e-10	2.24e-10	1.66e-10	1.19e-10	9.86e-11	1.12e-10
	S	9.45e-10	4.61e-10	2.31e-10	1.70e-10	1.23e-10	1.02e-10	1.16e-10
	F	5.34e-10	3.17e-10	1.48e-10	1.08e-10	6.96e-11	6.14e-11	7.00e-11
Cd-117m	M	9.37e-10	4.64e-10	2.38e-10	1.74e-10	1.28e-10	1.13e-10	1.26e-10
	S	9.72e-10	4.76e-10	2.45e-10	1.79e-10	1.33e-10	1.17e-10	1.30e-10
	F	4.58e-10	2.65e-10	1.24e-10	9.50e-11	6.06e-11	4.47e-11	5.34e-11
	M	6.12e-10	3.42e-10	1.68e-10	1.28e-10	8.68e-11	6.68e-11	7.77e-11
Cd-118	S	6.18e-10	3.45e-10	1.70e-10	1.29e-10	8.77e-11	6.76e-11	7.86e-11
Indium								
In-107	F	8.89e-11	5.12e-11	2.44e-11	1.85e-11	1.18e-11	9.85e-12	1.14e-11
	M	1.33e-10	6.68e-11	3.42e-11	2.56e-11	1.78e-11	1.51e-11	1.71e-11
	S	1.37e-10	6.79e-11	3.49e-11	2.61e-11	1.83e-11	1.55e-11	1.75e-11
	F	1.59e-10	9.20e-11	4.43e-11	3.36e-11	2.10e-11	1.97e-11	2.21e-11
In-108	M	1.79e-10	1.06e-10	5.34e-11	3.98e-11	2.56e-11	2.46e-11	2.73e-11
	S	1.80e-10	1.07e-10	5.37e-11	4.00e-11	2.58e-11	2.48e-11	2.75e-11
	F	1.80e-10	1.05e-10	4.98e-11	3.81e-11	2.37e-11	1.95e-11	2.27e-11
	M	2.15e-10	1.25e-10	6.16e-11	4.68e-11	3.03e-11	2.52e-11	2.90e-11
In-108m	S	2.16e-10	1.25e-10	6.20e-11	4.71e-11	3.05e-11	2.54e-11	2.92e-11
	F	1.22e-10	7.19e-11	3.41e-11	2.50e-11	1.58e-11	1.50e-11	1.68e-11
	M	1.47e-10	8.50e-11	4.26e-11	3.08e-11	2.08e-11	2.00e-11	2.21e-11
	S	1.51e-10	8.79e-11	4.43e-11	3.20e-11	2.18e-11	2.10e-11	2.31e-11
In-110	F	4.44e-10	2.71e-10	1.28e-10	9.65e-11	5.98e-11	5.88e-11	6.54e-11
	M	4.77e-10	3.12e-10	1.53e-10	1.11e-10	6.92e-11	7.16e-11	7.87e-11
	S	4.80e-10	3.15e-10	1.54e-10	1.12e-10	6.99e-11	7.27e-11	7.98e-11
	F	2.47e-10	1.42e-10	6.61e-11	5.04e-11	3.11e-11	2.47e-11	2.91e-11
In-110m	M	3.09e-10	1.75e-10	8.58e-11	6.51e-11	4.27e-11	3.48e-11	4.01e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
In-111	S	3.12e-10	1.76e-10	8.65e-11	6.56e-11	4.32e-11	3.52e-11	4.06e-11
	F	6.21e-10	4.08e-10	1.94e-10	1.37e-10	8.69e-11	8.49e-11	9.47e-11
	M	9.30e-10	5.12e-10	2.66e-10	1.88e-10	1.30e-10	1.30e-10	1.42e-10
In-112	S	1.02e-09	5.42e-10	2.85e-10	2.02e-10	1.41e-10	1.41e-10	1.54e-10
	F	3.30e-11	1.92e-11	9.21e-12	6.90e-12	4.93e-12	4.02e-12	4.57e-12
	M	3.88e-11	2.23e-11	1.10e-11	8.31e-12	6.13e-12	4.99e-12	5.63e-12
In-112m	S	3.89e-11	2.24e-11	1.11e-11	8.34e-12	6.16e-12	5.02e-12	5.66e-12
	F	7.14e-11	4.01e-11	1.99e-11	1.49e-11	1.13e-11	9.10e-12	1.03e-11
	M	9.60e-11	5.18e-11	2.70e-11	2.04e-11	1.64e-11	1.32e-11	1.47e-11
In-113m	S	9.67e-11	5.22e-11	2.72e-11	2.05e-11	1.65e-11	1.33e-11	1.48e-11
	F	8.15e-11	4.70e-11	2.12e-11	1.56e-11	1.03e-11	8.46e-12	9.81e-12
	M	1.13e-10	6.15e-11	3.04e-11	2.26e-11	1.66e-11	1.37e-11	1.55e-11
In-114m	S	1.15e-10	6.22e-11	3.08e-11	2.29e-11	1.69e-11	1.40e-11	1.58e-11
	F	3.33e-08	2.09e-08	9.78e-09	5.74e-09	3.67e-09	3.41e-09	3.94e-09
	M	4.89e-08	2.51e-08	1.41e-08	9.26e-09	7.09e-09	6.89e-09	7.48e-09
In-115	S	6.38e-08	3.26e-08	1.88e-08	1.26e-08	9.80e-09	9.59e-09	1.03e-08
	F	8.36e-08	6.79e-08	3.99e-08	2.71e-08	2.26e-08	2.29e-08	2.41e-08
	M	4.62e-08	3.50e-08	2.21e-08	1.47e-08	1.32e-08	1.35e-08	1.40e-08
In-115m	S	9.93e-08	8.95e-08	6.91e-08	5.49e-08	5.43e-08	5.56e-08	5.62e-08
	F	1.88e-10	1.08e-10	4.75e-11	3.40e-11	2.20e-11	1.79e-11	2.10e-11
	M	3.07e-10	1.51e-10	7.57e-11	5.53e-11	4.17e-11	3.44e-11	3.87e-11
In-116m	S	3.18e-10	1.55e-10	7.80e-11	5.70e-11	4.32e-11	3.58e-11	4.02e-11
	F	1.67e-10	9.59e-11	4.58e-11	3.44e-11	2.30e-11	1.99e-11	2.26e-11
	M	2.14e-10	1.19e-10	6.04e-11	4.52e-11	3.25e-11	2.82e-11	3.15e-11
In-117	S	2.15e-10	1.20e-10	6.10e-11	4.56e-11	3.29e-11	2.85e-11	3.18e-11
	F	1.02e-10	5.82e-11	2.81e-11	2.09e-11	1.51e-11	1.25e-11	1.41e-11
	M	1.40e-10	7.56e-11	3.89e-11	2.92e-11	2.28e-11	1.88e-11	2.09e-11
In-117m	S	1.42e-10	7.62e-11	3.93e-11	2.95e-11	2.31e-11	1.90e-11	2.12e-11
	F	2.94e-10	1.68e-10	7.52e-11	5.58e-11	3.57e-11	2.77e-11	3.28e-11
	M	4.48e-10	2.30e-10	1.15e-10	8.58e-11	6.29e-11	5.02e-11	5.72e-11
In-119m	S	4.58e-10	2.33e-10	1.17e-10	8.75e-11	6.44e-11	5.15e-11	5.85e-11
	F	1.11e-10	6.47e-11	3.04e-11	2.32e-11	1.51e-11	1.15e-11	1.36e-11
	M	1.29e-10	7.51e-11	3.64e-11	2.78e-11	1.86e-11	1.44e-11	1.68e-11
Tin	S	1.30e-10	7.53e-11	3.65e-11	2.79e-11	1.87e-11	1.45e-11	1.69e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Sn-108	F	5.16e-11	2.99e-11	1.43e-11	1.09e-11	6.81e-12	5.66e-12	6.56e-12
	M	6.27e-11	3.62e-11	1.80e-11	1.37e-11	8.91e-12	7.52e-12	8.60e-12
	S	6.30e-11	3.64e-11	1.82e-11	1.38e-11	8.98e-12	7.58e-12	8.67e-12
Sn-109	F	3.61e-11	2.12e-11	1.04e-11	7.81e-12	4.92e-12	4.73e-12	5.27e-12
	M	3.99e-11	2.37e-11	1.20e-11	8.89e-12	5.75e-12	5.62e-12	6.21e-12
	S	4.03e-11	2.40e-11	1.21e-11	9.00e-12	5.83e-12	5.70e-12	6.29e-12
Sn-110	F	5.97e-10	3.45e-10	1.53e-10	1.13e-10	6.77e-11	5.49e-11	6.52e-11
	M	8.63e-10	4.66e-10	2.24e-10	1.65e-10	1.08e-10	9.47e-11	1.08e-10
	S	8.91e-10	4.77e-10	2.31e-10	1.70e-10	1.12e-10	9.86e-11	1.12e-10
Sn-111	F	5.40e-11	3.19e-11	1.50e-11	1.13e-11	7.27e-12	5.99e-12	6.93e-12
	M	6.69e-11	3.84e-11	1.90e-11	1.43e-11	9.75e-12	8.17e-12	9.29e-12
	S	6.80e-11	3.89e-11	1.93e-11	1.45e-11	9.90e-12	8.33e-12	9.46e-12
Sn-113	F	8.84e-09	4.90e-09	2.29e-09	1.32e-09	9.24e-10	7.70e-10	9.04e-10
	M	1.36e-08	7.62e-09	4.24e-09	2.77e-09	2.09e-09	2.07e-09	2.24e-09
	S	2.01e-08	1.21e-08	6.99e-09	4.69e-09	3.56e-09	3.61e-09	3.86e-09
Sn-113m	F	1.77e-11	5.85e-12	3.47e-12	2.47e-12	2.27e-12	1.88e-12	2.05e-12
	M	2.68e-11	8.41e-12	5.20e-12	3.75e-12	3.50e-12	2.95e-12	3.19e-12
	S	2.78e-11	9.01e-12	5.57e-12	4.01e-12	3.71e-12	3.15e-12	3.41e-12
Sn-117m	F	1.94e-09	1.02e-09	4.42e-10	2.54e-10	1.74e-10	1.41e-10	1.69e-10
	M	6.94e-09	2.57e-09	1.46e-09	9.74e-10	7.78e-10	7.24e-10	7.91e-10
	S	8.47e-09	3.12e-09	1.79e-09	1.20e-09	9.62e-10	9.02e-10	9.83e-10
Sn-119m	F	4.14e-09	2.27e-09	1.09e-09	6.07e-10	3.98e-10	3.48e-10	4.10e-10
	M	1.05e-08	5.01e-09	2.83e-09	1.82e-09	1.39e-09	1.31e-09	1.44e-09
	S	1.77e-08	1.01e-08	5.90e-09	3.88e-09	2.97e-09	2.86e-09	3.10e-09
Sn-121	F	2.46e-10	1.29e-10	5.56e-11	3.59e-11	2.52e-11	1.95e-11	2.32e-11
	M	1.08e-09	3.39e-10	1.97e-10	1.35e-10	1.14e-10	9.95e-11	1.09e-10
	S	1.24e-09	3.78e-10	2.23e-10	1.53e-10	1.30e-10	1.14e-10	1.25e-10
Sn-121m	F	1.30e-08	7.98e-09	3.79e-09	2.11e-09	1.46e-09	1.21e-09	1.43e-09
	M	1.82e-08	1.05e-08	5.90e-09	3.73e-09	2.88e-09	2.69e-09	2.95e-09
	S	6.68e-08	5.79e-08	4.25e-08	3.26e-08	3.15e-08	3.25e-08	3.30e-08
Sn-123	F	2.25e-08	1.28e-08	5.55e-09	2.92e-09	2.17e-09	1.52e-09	1.89e-09
	M	4.12e-08	2.23e-08	1.26e-08	8.19e-09	6.41e-09	6.09e-09	6.62e-09
	S	6.39e-08	3.75e-08	2.22e-08	1.49e-08	1.17e-08	1.15e-08	1.23e-08
Sn-123m	F	1.25e-10	7.23e-11	3.38e-11	2.54e-11	1.75e-11	1.35e-11	1.57e-11
	M	1.65e-10	9.15e-11	4.55e-11	3.45e-11	2.55e-11	2.00e-11	2.28e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Sn-125	S	1.66e-10	9.21e-11	4.59e-11	3.48e-11	2.57e-11	2.02e-11	2.30e-11
	F	6.42e-09	3.58e-09	1.58e-09	9.27e-10	6.33e-10	4.71e-10	5.76e-10
	M	1.50e-08	7.09e-09	3.88e-09	2.62e-09	1.96e-09	1.89e-09	2.06e-09
Sn-126	S	1.81e-08	8.63e-09	4.82e-09	3.29e-09	2.49e-09	2.45e-09	2.65e-09
	F	1.26e-07	8.13e-08	4.25e-08	2.54e-08	1.95e-08	1.71e-08	1.92e-08
	M	1.47e-07	9.58e-08	5.66e-08	3.71e-08	2.96e-08	2.96e-08	3.15e-08
Sn-127	S	8.07e-07	7.82e-07	6.48e-07	5.44e-07	5.58e-07	5.78e-07	5.79e-07
	F	4.41e-10	2.59e-10	1.20e-10	8.55e-11	5.45e-11	4.43e-11	5.20e-11
	M	6.73e-10	3.43e-10	1.74e-10	1.27e-10	9.00e-11	7.78e-11	8.75e-11
Sn-128	S	7.06e-10	3.54e-10	1.81e-10	1.32e-10	9.43e-11	8.22e-11	9.21e-11
	F	4.06e-10	2.32e-10	1.09e-10	8.20e-11	5.28e-11	4.12e-11	4.84e-11
	M	5.66e-10	3.03e-10	1.53e-10	1.15e-10	8.06e-11	6.54e-11	7.46e-11
	S	5.72e-10	3.06e-10	1.54e-10	1.16e-10	8.17e-11	6.64e-11	7.56e-11
Antimony								
Sb-115	F	5.80e-11	3.43e-11	1.63e-11	1.22e-11	7.88e-12	6.45e-12	7.47e-12
	M	7.09e-11	4.12e-11	2.03e-11	1.53e-11	1.03e-11	8.66e-12	9.86e-12
	S	7.13e-11	4.14e-11	2.04e-11	1.54e-11	1.04e-11	8.73e-12	9.94e-12
Sb-116	F	6.46e-11	3.81e-11	1.82e-11	1.38e-11	8.90e-12	7.41e-12	8.54e-12
	M	7.33e-11	4.32e-11	2.12e-11	1.61e-11	1.06e-11	8.93e-12	1.02e-11
	S	7.35e-11	4.33e-11	2.12e-11	1.61e-11	1.06e-11	8.97e-12	1.02e-11
Sb-116m	F	1.33e-10	7.64e-11	3.82e-11	2.82e-11	1.87e-11	1.71e-11	1.91e-11
	M	1.84e-10	9.81e-11	5.12e-11	3.79e-11	2.68e-11	2.50e-11	2.75e-11
	S	1.87e-10	9.90e-11	5.17e-11	3.83e-11	2.72e-11	2.54e-11	2.79e-11
Sb-117	F	3.68e-11	2.23e-11	1.07e-11	7.60e-12	5.18e-12	4.55e-12	5.15e-12
	M	6.71e-11	3.36e-11	1.76e-11	1.29e-11	9.98e-12	8.79e-12	9.67e-12
	S	6.94e-11	3.44e-11	1.80e-11	1.32e-11	1.03e-11	9.07e-12	9.97e-12
Sb-118m	F	3.18e-10	2.14e-10	1.04e-10	7.47e-11	4.58e-11	4.36e-11	4.91e-11
	M	4.35e-10	2.76e-10	1.37e-10	9.89e-11	6.27e-11	6.35e-11	7.00e-11
	S	4.46e-10	2.82e-10	1.39e-10	1.01e-10	6.42e-11	6.54e-11	7.19e-11
Sb-119	F	1.18e-10	8.12e-11	3.71e-11	2.18e-11	1.28e-11	1.05e-11	1.28e-11
	M	1.28e-10	8.51e-11	4.01e-11	2.68e-11	1.63e-11	1.50e-11	1.72e-11
	S	1.33e-10	8.75e-11	4.13e-11	2.80e-11	1.72e-11	1.60e-11	1.83e-11
Sb-120	F	3.56e-11	2.10e-11	9.89e-12	7.47e-12	4.94e-12	3.95e-12	4.58e-12
	M	4.10e-11	2.41e-11	1.17e-11	8.86e-12	6.03e-12	4.88e-12	5.60e-12
	S	4.12e-11	2.41e-11	1.17e-11	8.89e-12	6.05e-12	4.90e-12	5.62e-12

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Sb-120m	F	2.91e-09	2.07e-09	1.06e-09	7.08e-10	4.56e-10	4.29e-10	4.82e-10
	M	4.71e-09	2.86e-09	1.53e-09	1.08e-09	7.38e-10	7.81e-10	8.41e-10
	S	5.23e-09	3.10e-09	1.67e-09	1.18e-09	8.18e-10	8.79e-10	9.41e-10
Sb-122	F	3.05e-09	1.97e-09	9.28e-10	5.49e-10	3.39e-10	2.66e-10	3.24e-10
	M	5.12e-09	2.44e-09	1.28e-09	8.76e-10	6.24e-10	5.78e-10	6.42e-10
	S	5.65e-09	2.60e-09	1.39e-09	9.59e-10	6.92e-10	6.52e-10	7.19e-10
Sb-124	F	1.31e-08	8.72e-09	4.51e-09	2.61e-09	1.73e-09	1.49e-09	1.73e-09
	M	3.09e-08	1.73e-08	9.95e-09	6.67e-09	5.03e-09	5.21e-09	5.57e-09
	S	4.34e-08	2.48e-08	1.45e-08	9.88e-09	7.53e-09	7.95e-09	8.43e-09
Sb-124n	F	2.32e-11	1.38e-11	6.69e-12	4.86e-12	3.29e-12	2.75e-12	3.15e-12
	M	3.07e-11	1.76e-11	9.01e-12	6.62e-12	4.74e-12	4.16e-12	4.64e-12
	S	3.30e-11	1.90e-11	9.83e-12	7.21e-12	5.20e-12	4.66e-12	5.16e-12
Sb-125	F	7.00e-09	4.69e-09	2.47e-09	1.43e-09	9.79e-10	8.83e-10	1.01e-09
	M	1.94e-08	1.18e-08	6.89e-09	4.56e-09	3.48e-09	3.56e-09	3.80e-09
	S	5.22e-08	4.06e-08	2.62e-08	1.80e-08	1.53e-08	1.63e-08	1.69e-08
Sb-126	F	8.47e-09	5.75e-09	2.90e-09	1.74e-09	1.14e-09	9.96e-10	1.15e-09
	M	1.49e-08	8.12e-09	4.47e-09	3.04e-09	2.20e-09	2.27e-09	2.44e-09
	S	1.74e-08	9.25e-09	5.14e-09	3.55e-09	2.59e-09	2.73e-09	2.92e-09
Sb-126m	F	9.23e-11	5.45e-11	2.59e-11	1.95e-11	1.28e-11	1.04e-11	1.20e-11
	M	1.09e-10	6.35e-11	3.12e-11	2.36e-11	1.60e-11	1.32e-11	1.51e-11
	S	1.10e-10	6.39e-11	3.14e-11	2.38e-11	1.62e-11	1.34e-11	1.53e-11
Sb-127	F	3.78e-09	2.48e-09	1.17e-09	6.54e-10	4.12e-10	3.30e-10	4.01e-10
	M	7.21e-09	3.10e-09	1.68e-09	1.13e-09	8.38e-10	7.86e-10	8.67e-10
	S	8.23e-09	3.40e-09	1.88e-09	1.28e-09	9.63e-10	9.16e-10	1.00e-09
Sb-128	F	1.26e-09	8.06e-10	3.73e-10	2.63e-10	1.61e-10	1.38e-10	1.61e-10
	M	1.95e-09	1.09e-09	5.37e-10	3.89e-10	2.60e-10	2.40e-10	2.69e-10
	S	2.04e-09	1.12e-09	5.56e-10	4.04e-10	2.71e-10	2.52e-10	2.81e-10
Sb-128m	F	7.31e-11	4.27e-11	2.02e-11	1.53e-11	1.01e-11	8.24e-12	9.51e-12
	M	8.15e-11	4.76e-11	2.30e-11	1.74e-11	1.17e-11	9.65e-12	1.10e-11
	S	8.17e-11	4.77e-11	2.30e-11	1.75e-11	1.17e-11	9.69e-12	1.11e-11
Sb-129	F	7.72e-10	4.49e-10	2.00e-10	1.42e-10	8.70e-11	6.75e-11	8.12e-11
	M	1.27e-09	6.36e-10	3.15e-10	2.30e-10	1.62e-10	1.37e-10	1.55e-10
	S	1.33e-09	6.56e-10	3.27e-10	2.39e-10	1.70e-10	1.45e-10	1.64e-10
Sb-130	F	2.22e-10	1.31e-10	6.27e-11	4.72e-11	3.05e-11	2.49e-11	2.88e-11
	M	2.80e-10	1.61e-10	8.00e-11	6.06e-11	4.11e-11	3.45e-11	3.92e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Sb-131	S	2.82e-10	1.62e-10	8.06e-11	6.10e-11	4.15e-11	3.49e-11	3.96e-11
	F	3.05e-10	2.25e-10	1.13e-10	6.88e-11	4.38e-11	3.30e-11	4.00e-11
	M	2.78e-10	1.66e-10	8.41e-11	5.99e-11	4.13e-11	3.30e-11	3.81e-11
	S	2.58e-10	1.44e-10	7.24e-11	5.46e-11	3.81e-11	3.09e-11	3.53e-11
Tellurium								
Te-114	F	1.33e-10	7.77e-11	3.68e-11	2.81e-11	1.76e-11	1.42e-11	1.66e-11
	M	1.64e-10	9.57e-11	4.73e-11	3.60e-11	2.34e-11	1.93e-11	2.22e-11
	S	1.65e-10	9.60e-11	4.75e-11	3.61e-11	2.35e-11	1.94e-11	2.23e-11
Te-116	F	4.19e-10	2.40e-10	1.09e-10	8.04e-11	4.95e-11	3.95e-11	4.68e-11
	M	6.81e-10	3.45e-10	1.73e-10	1.28e-10	8.88e-11	7.62e-11	8.61e-11
Te-117	S	6.98e-10	3.50e-10	1.77e-10	1.31e-10	9.10e-11	7.84e-11	8.85e-11
	F	1.15e-10	6.60e-11	3.06e-11	2.31e-11	1.42e-11	1.22e-11	1.41e-11
	M	1.53e-10	8.61e-11	4.29e-11	3.21e-11	2.15e-11	1.88e-11	2.12e-11
Te-118	S	1.54e-10	8.69e-11	4.34e-11	3.25e-11	2.18e-11	1.91e-11	2.15e-11
	F	6.80e-09	3.99e-09	1.84e-09	1.14e-09	7.01e-10	5.94e-10	7.07e-10
	M	1.25e-08	6.22e-09	3.32e-09	2.27e-09	1.63e-09	1.59e-09	1.74e-09
Te-119	S	1.41e-08	6.94e-09	3.76e-09	2.59e-09	1.89e-09	1.86e-09	2.02e-09
	F	3.63e-10	2.22e-10	1.04e-10	7.55e-11	4.61e-11	4.36e-11	4.94e-11
	M	4.31e-10	2.89e-10	1.41e-10	1.01e-10	6.32e-11	6.38e-11	7.06e-11
Te-119m	S	4.43e-10	2.99e-10	1.46e-10	1.05e-10	6.58e-11	6.69e-11	7.38e-11
	F	1.95e-09	1.14e-09	5.54e-10	3.93e-10	2.47e-10	2.41e-10	2.70e-10
	M	2.41e-09	1.57e-09	8.19e-10	5.80e-10	3.85e-10	4.11e-10	4.44e-10
Te-121	S	2.56e-09	1.70e-09	8.93e-10	6.31e-10	4.22e-10	4.56e-10	4.90e-10
	F	1.50e-09	8.33e-10	4.08e-10	2.85e-10	1.84e-10	1.84e-10	2.04e-10
	M	2.17e-09	1.42e-09	7.73e-10	5.41e-10	3.77e-10	4.21e-10	4.46e-10
Te-121m	S	2.52e-09	1.69e-09	9.36e-10	6.55e-10	4.61e-10	5.22e-10	5.51e-10
	F	4.32e-09	2.28e-09	1.04e-09	6.04e-10	4.13e-10	3.65e-10	4.25e-10
	M	1.59e-08	8.27e-09	4.80e-09	3.23e-09	2.48e-09	2.59e-09	2.76e-09
Te-123	S	2.67e-08	1.60e-08	9.59e-09	6.56e-09	5.05e-09	5.41e-09	5.70e-09
	F	1.06e-10	5.38e-11	2.23e-11	1.08e-11	7.60e-12	5.14e-12	6.71e-12
	M	1.84e-10	1.32e-10	6.94e-11	4.13e-11	2.91e-11	2.60e-11	2.94e-11
Te-123m	S	1.17e-09	1.14e-09	8.40e-10	6.38e-10	6.14e-10	6.26e-10	6.37e-10
	F	3.44e-09	1.82e-09	7.88e-10	4.21e-10	2.82e-10	2.23e-10	2.74e-10
	M	1.30e-08	5.68e-09	3.24e-09	2.14e-09	1.68e-09	1.61e-09	1.75e-09
	S	1.94e-08	9.50e-09	5.53e-09	3.72e-09	2.89e-09	2.84e-09	3.06e-09

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Te-125m	F	2.98e-09	1.58e-09	6.74e-10	3.47e-10	2.26e-10	1.71e-10	2.16e-10
	M	9.99e-09	4.09e-09	2.30e-09	1.50e-09	1.17e-09	1.09e-09	1.20e-09
	S	1.34e-08	5.81e-09	3.31e-09	2.19e-09	1.71e-09	1.61e-09	1.76e-09
Te-127	F	3.46e-10	1.88e-10	7.95e-11	5.33e-11	3.30e-11	2.64e-11	3.18e-11
	M	7.11e-10	2.92e-10	1.52e-10	1.09e-10	8.53e-11	7.12e-11	7.97e-11
	S	7.55e-10	3.03e-10	1.60e-10	1.14e-10	9.06e-11	7.60e-11	8.48e-11
Te-127m	F	7.99e-09	4.33e-09	1.82e-09	9.05e-10	6.09e-10	4.20e-10	5.47e-10
	M	2.62e-08	1.21e-08	6.77e-09	4.40e-09	3.42e-09	3.20e-09	3.50e-09
	S	3.99e-08	2.02e-08	1.17e-08	7.73e-09	6.01e-09	5.74e-09	6.23e-09
Te-129	F	1.77e-10	1.01e-10	4.46e-11	3.33e-11	2.10e-11	1.57e-11	1.89e-11
	M	2.57e-10	1.39e-10	6.86e-11	5.19e-11	3.71e-11	2.87e-11	3.30e-11
	S	2.60e-10	1.41e-10	6.94e-11	5.25e-11	3.76e-11	2.92e-11	3.36e-11
Te-129m	F	1.09e-08	6.07e-09	2.67e-09	1.42e-09	9.23e-10	6.87e-10	8.64e-10
	M	2.72e-08	1.27e-08	7.07e-09	4.65e-09	3.58e-09	3.41e-09	3.72e-09
	S	3.54e-08	1.67e-08	9.53e-09	6.37e-09	4.94e-09	4.77e-09	5.17e-09
Te-131	F	2.42e-10	1.96e-10	1.00e-10	5.62e-11	3.54e-11	2.61e-11	3.22e-11
	M	1.83e-10	1.15e-10	5.84e-11	3.99e-11	2.76e-11	2.16e-11	2.51e-11
	S	1.60e-10	8.95e-11	4.46e-11	3.35e-11	2.37e-11	1.89e-11	2.16e-11
Te-131m	F	6.83e-09	5.46e-09	2.86e-09	1.47e-09	9.16e-10	6.89e-10	8.57e-10
	M	5.13e-09	2.76e-09	1.49e-09	9.26e-10	6.52e-10	5.80e-10	6.57e-10
	S	4.54e-09	2.05e-09	1.10e-09	7.64e-10	5.56e-10	5.29e-10	5.81e-10
Te-132	F	1.44e-08	1.01e-08	4.93e-09	2.58e-09	1.62e-09	1.23e-09	1.53e-09
	M	1.11e-08	5.54e-09	2.94e-09	1.90e-09	1.34e-09	1.27e-09	1.41e-09
	S	1.05e-08	4.87e-09	2.65e-09	1.83e-09	1.32e-09	1.31e-09	1.43e-09
Te-133	F	2.09e-10	1.66e-10	7.91e-11	4.17e-11	2.61e-11	1.91e-11	2.40e-11
	M	1.20e-10	7.58e-11	3.69e-11	2.44e-11	1.65e-11	1.33e-11	1.55e-11
	S	9.83e-11	5.51e-11	2.71e-11	2.01e-11	1.39e-11	1.16e-11	1.32e-11
Te-133m	F	8.32e-10	6.73e-10	3.20e-10	1.63e-10	1.01e-10	7.30e-11	9.30e-11
	M	4.74e-10	2.91e-10	1.44e-10	9.34e-11	6.41e-11	5.24e-11	6.08e-11
	S	3.79e-10	2.00e-10	1.02e-10	7.47e-11	5.31e-11	4.53e-11	5.10e-11
Te-134	F	3.09e-10	2.05e-10	9.77e-11	6.23e-11	4.05e-11	3.14e-11	3.75e-11
	M	3.41e-10	1.83e-10	9.27e-11	6.88e-11	4.99e-11	4.19e-11	4.71e-11
	S	3.40e-10	1.80e-10	9.17e-11	6.85e-11	5.00e-11	4.22e-11	4.73e-11
Iodine								
I-118	F	1.52e-10	9.54e-11	4.46e-11	3.13e-11	2.00e-11	1.53e-11	1.82e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
I-119	M	1.85e-10	1.07e-10	5.20e-11	3.93e-11	2.56e-11	2.11e-11	2.43e-11
	S	1.88e-10	1.08e-10	5.28e-11	3.98e-11	2.61e-11	2.16e-11	2.48e-11
	F	7.54e-11	4.81e-11	2.24e-11	1.53e-11	9.77e-12	7.56e-12	9.02e-12
	M	8.73e-11	5.18e-11	2.53e-11	1.91e-11	1.27e-11	1.05e-11	1.20e-11
I-120	S	8.76e-11	5.20e-11	2.54e-11	1.92e-11	1.28e-11	1.06e-11	1.21e-11
	F	6.71e-10	4.97e-10	2.44e-10	1.50e-10	9.70e-11	7.02e-11	8.59e-11
	M	6.04e-10	3.49e-10	1.70e-10	1.27e-10	8.22e-11	6.70e-11	7.76e-11
I-120m	S	5.95e-10	3.37e-10	1.64e-10	1.24e-10	8.06e-11	6.61e-11	7.63e-11
	F	3.80e-10	2.66e-10	1.29e-10	8.25e-11	5.24e-11	3.91e-11	4.74e-11
	M	3.77e-10	2.20e-10	1.08e-10	8.14e-11	5.25e-11	4.39e-11	5.05e-11
I-121	S	3.75e-10	2.16e-10	1.07e-10	8.08e-11	5.22e-11	4.38e-11	5.03e-11
	F	1.46e-10	1.12e-10	5.36e-11	2.92e-11	1.87e-11	1.43e-11	1.76e-11
	M	1.04e-10	6.04e-11	3.04e-11	2.16e-11	1.52e-11	1.36e-11	1.52e-11
I-123	S	1.01e-10	5.67e-11	2.88e-11	2.11e-11	1.50e-11	1.37e-11	1.52e-11
	F	8.08e-10	7.06e-10	3.30e-10	1.56e-10	9.65e-11	6.97e-11	9.00e-11
	M	3.47e-10	2.18e-10	1.07e-10	6.34e-11	4.37e-11	3.72e-11	4.31e-11
I-124	S	2.54e-10	1.23e-10	6.37e-11	4.49e-11	3.28e-11	3.03e-11	3.35e-11
	F	3.06e-08	2.97e-08	1.58e-08	7.88e-09	4.97e-09	3.56e-09	4.49e-09
	M	9.25e-09	7.76e-09	4.15e-09	2.24e-09	1.46e-09	1.17e-09	1.40e-09
I-125	S	3.96e-09	2.33e-09	1.24e-09	8.36e-10	5.76e-10	5.73e-10	6.28e-10
	F	1.89e-08	2.25e-08	1.63e-08	9.70e-09	6.66e-09	5.35e-09	6.13e-09
	M	6.19e-09	6.63e-09	4.74e-09	2.83e-09	2.05e-09	1.70e-09	1.91e-09
I-126	S	2.46e-09	1.76e-09	9.94e-10	6.39e-10	4.52e-10	4.37e-10	4.79e-10
	F	6.50e-08	6.82e-08	3.94e-08	1.98e-08	1.24e-08	8.97e-09	1.12e-08
	M	1.90e-08	1.72e-08	1.00e-08	5.25e-09	3.46e-09	2.67e-09	3.21e-09
I-128	S	6.74e-09	3.62e-09	2.03e-09	1.30e-09	9.50e-10	9.10e-10	1.00e-09
	F	1.18e-10	7.75e-11	3.57e-11	2.36e-11	1.50e-11	1.08e-11	1.32e-11
	M	1.34e-10	7.75e-11	3.78e-11	2.88e-11	1.96e-11	1.51e-11	1.75e-11
I-129	S	1.34e-10	7.73e-11	3.77e-11	2.88e-11	1.96e-11	1.51e-11	1.75e-11
	F	6.61e-08	8.46e-08	7.46e-08	5.35e-08	4.16e-08	4.00e-08	4.22e-08
	M	3.13e-08	3.26e-08	2.87e-08	2.02e-08	1.73e-08	1.69e-08	1.76e-08
I-130	S	4.84e-08	4.35e-08	3.36e-08	2.66e-08	2.61e-08	2.67e-08	2.70e-08
	F	6.31e-09	5.46e-09	2.60e-09	1.25e-09	7.77e-10	5.60e-10	7.20e-10
	M	2.57e-09	1.70e-09	8.32e-10	4.99e-10	3.31e-10	2.84e-10	3.30e-10
	S	1.84e-09	9.89e-10	4.98e-10	3.53e-10	2.43e-10	2.28e-10	2.53e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
I-131	F	6.20e-08	6.20e-08	3.31e-08	1.58e-08	9.69e-09	6.87e-09	8.81e-09
	M	1.82e-08	1.52e-08	8.25e-09	4.16e-09	2.70e-09	2.05e-09	2.52e-09
	S	6.82e-09	3.10e-09	1.73e-09	1.10e-09	8.25e-10	7.65e-10	8.47e-10
I-132	F	9.00e-10	6.98e-10	3.35e-10	1.82e-10	1.16e-10	8.44e-11	1.05e-10
	M	6.13e-10	3.50e-10	1.73e-10	1.24e-10	8.47e-11	7.16e-11	8.16e-11
	S	5.82e-10	3.17e-10	1.57e-10	1.17e-10	8.08e-11	6.94e-11	7.84e-11
I-132m	F	7.30e-10	5.86e-10	2.81e-10	1.45e-10	9.27e-11	6.69e-11	8.44e-11
	M	4.68e-10	2.48e-10	1.26e-10	8.72e-11	6.37e-11	5.37e-11	6.07e-11
	S	4.35e-10	2.12e-10	1.09e-10	8.00e-11	5.97e-11	5.14e-11	5.73e-11
I-133	F	1.47e-08	1.31e-08	6.25e-09	2.90e-09	1.77e-09	1.22e-09	1.61e-09
	M	4.54e-09	3.23e-09	1.57e-09	8.44e-10	5.46e-10	4.25e-10	5.19e-10
	S	2.37e-09	1.16e-09	5.92e-10	4.06e-10	2.86e-10	2.55e-10	2.87e-10
I-134	F	2.94e-10	2.05e-10	9.72e-11	5.98e-11	3.81e-11	2.88e-11	3.50e-11
	M	2.89e-10	1.66e-10	8.24e-11	6.16e-11	4.22e-11	3.53e-11	4.01e-11
	S	2.88e-10	1.63e-10	8.12e-11	6.12e-11	4.20e-11	3.54e-11	4.01e-11
I-135	F	3.08e-09	2.60e-09	1.24e-09	6.02e-10	3.75e-10	2.66e-10	3.43e-10
	M	1.35e-09	8.29e-10	4.06e-10	2.56e-10	1.73e-10	1.45e-10	1.68e-10
	S	1.07e-09	5.51e-10	2.76e-10	1.99e-10	1.40e-10	1.24e-10	1.39e-10
Cesium								
Cs-125	F	9.08e-11	5.32e-11	2.32e-11	1.70e-11	1.05e-11	8.25e-12	9.84e-12
	M	1.25e-10	7.06e-11	3.48e-11	2.64e-11	1.78e-11	1.44e-11	1.66e-11
	S	1.25e-10	7.08e-11	3.50e-11	2.66e-11	1.79e-11	1.45e-11	1.67e-11
Cs-127	F	1.04e-10	6.26e-11	2.84e-11	1.93e-11	1.22e-11	1.18e-11	1.33e-11
	M	1.58e-10	8.84e-11	4.37e-11	3.15e-11	2.13e-11	2.05e-11	2.27e-11
	S	1.63e-10	9.11e-11	4.53e-11	3.28e-11	2.22e-11	2.13e-11	2.35e-11
Cs-129	F	2.57e-10	1.60e-10	7.45e-11	4.72e-11	3.00e-11	2.95e-11	3.33e-11
	M	3.40e-10	2.10e-10	1.04e-10	7.28e-11	4.68e-11	4.73e-11	5.22e-11
	S	3.55e-10	2.20e-10	1.09e-10	7.78e-11	5.00e-11	5.07e-11	5.58e-11
Cs-130	F	6.36e-11	3.72e-11	1.63e-11	1.21e-11	7.52e-12	5.77e-12	6.91e-12
	M	8.58e-11	4.97e-11	2.43e-11	1.85e-11	1.24e-11	9.83e-12	1.14e-11
	S	8.61e-11	4.98e-11	2.44e-11	1.86e-11	1.25e-11	9.89e-12	1.14e-11
Cs-131	F	2.42e-10	1.50e-10	6.69e-11	3.78e-11	2.35e-11	2.17e-11	2.55e-11
	M	2.55e-10	1.63e-10	8.03e-11	5.25e-11	3.45e-11	3.42e-11	3.80e-11
	S	2.63e-10	1.70e-10	8.54e-11	5.75e-11	3.82e-11	3.82e-11	4.21e-11
Cs-132	F	1.45e-09	9.74e-10	5.31e-10	3.43e-10	2.25e-10	2.12e-10	2.38e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Cs-134	M	1.53e-09	1.01e-09	5.40e-10	3.75e-10	2.52e-10	2.69e-10	2.90e-10
	S	1.55e-09	1.03e-09	5.45e-10	3.85e-10	2.60e-10	2.86e-10	3.06e-10
	F	1.36e-08	9.82e-09	7.02e-09	5.57e-09	5.31e-09	5.92e-09	5.94e-09
	M	3.49e-08	2.27e-08	1.40e-08	9.86e-09	8.03e-09	8.86e-09	9.17e-09
Cs-134m	S	8.89e-08	7.03e-08	4.57e-08	3.16e-08	2.69e-08	2.98e-08	3.06e-08
	F	9.51e-11	5.46e-11	2.29e-11	1.49e-11	1.08e-11	9.71e-12	1.10e-11
	M	2.45e-10	9.88e-11	5.65e-11	4.13e-11	3.72e-11	3.10e-11	3.37e-11
	S	2.62e-10	1.08e-10	6.30e-11	4.59e-11	4.15e-11	3.54e-11	3.83e-11
Cs-135	F	3.07e-09	1.95e-09	8.98e-10	5.55e-10	4.70e-10	5.48e-10	5.70e-10
	M	1.25e-08	6.42e-09	3.68e-09	2.42e-09	1.92e-09	1.86e-09	2.01e-09
Cs-135m	S	5.40e-08	4.65e-08	3.50e-08	2.72e-08	2.65e-08	2.70e-08	2.74e-08
	F	4.53e-11	2.73e-11	1.33e-11	9.77e-12	6.00e-12	5.85e-12	6.54e-12
	M	5.62e-11	3.38e-11	1.71e-11	1.27e-11	7.92e-12	7.98e-12	8.81e-12
	S	5.64e-11	3.40e-11	1.71e-11	1.27e-11	7.96e-12	8.04e-12	8.86e-12
Cs-136	F	7.70e-09	5.15e-09	2.80e-09	1.81e-09	1.23e-09	1.16e-09	1.29e-09
	M	1.09e-08	5.71e-09	3.20e-09	2.19e-09	1.60e-09	1.65e-09	1.77e-09
Cs-137	S	1.19e-08	6.02e-09	3.39e-09	2.34e-09	1.73e-09	1.83e-09	1.95e-09
	F	1.35e-08	9.04e-09	5.71e-09	4.75e-09	4.61e-09	5.79e-09	5.70e-09
	M	3.69e-08	2.25e-08	1.35e-08	9.43e-09	7.79e-09	8.38e-09	8.72e-09
Cs-138	S	1.78e-07	1.62e-07	1.24e-07	9.91e-08	9.94e-08	1.05e-07	1.05e-07
	F	2.16e-10	1.27e-10	5.66e-11	4.20e-11	2.59e-11	2.00e-11	2.39e-11
	M	2.93e-10	1.70e-10	8.32e-11	6.35e-11	4.14e-11	3.31e-11	3.84e-11
	S	2.94e-10	1.70e-10	8.35e-11	6.38e-11	4.17e-11	3.33e-11	3.86e-11
Barium								
Ba-124	F	1.39e-10	8.08e-11	3.85e-11	2.93e-11	1.90e-11	1.52e-11	1.77e-11
	M	1.51e-10	8.74e-11	4.22e-11	3.22e-11	2.11e-11	1.70e-11	1.97e-11
	S	1.51e-10	8.76e-11	4.23e-11	3.23e-11	2.12e-11	1.71e-11	1.98e-11
Ba-126	F	6.07e-10	3.57e-10	1.65e-10	1.23e-10	7.58e-11	5.86e-11	6.99e-11
	M	7.66e-10	4.26e-10	2.07e-10	1.56e-10	1.02e-10	8.16e-11	9.48e-11
Ba-127	S	7.76e-10	4.30e-10	2.09e-10	1.58e-10	1.03e-10	8.31e-11	9.64e-11
	F	5.87e-11	3.37e-11	1.60e-11	1.20e-11	7.97e-12	6.46e-12	7.47e-12
	M	6.44e-11	3.67e-11	1.79e-11	1.35e-11	9.16e-12	7.50e-12	8.59e-12
Ba-128	S	6.46e-11	3.67e-11	1.79e-11	1.36e-11	9.22e-12	7.56e-12	8.65e-12
	F	4.84e-09	2.49e-09	1.08e-09	7.10e-10	4.80e-10	3.69e-10	4.42e-10
	M	7.18e-09	3.62e-09	1.85e-09	1.29e-09	8.93e-10	8.44e-10	9.37e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Ba-129	S	7.73e-09	3.90e-09	2.03e-09	1.42e-09	9.88e-10	9.53e-10	1.05e-09
	F	1.15e-10	6.79e-11	3.02e-11	2.13e-11	1.36e-11	1.16e-11	1.35e-11
	M	1.50e-10	8.28e-11	4.05e-11	2.98e-11	2.04e-11	1.76e-11	1.99e-11
Ba-129m	S	1.52e-10	8.36e-11	4.13e-11	3.05e-11	2.10e-11	1.82e-11	2.05e-11
	F	1.31e-10	8.42e-11	4.03e-11	2.80e-11	1.75e-11	1.81e-11	2.00e-11
	M	1.69e-10	9.94e-11	5.01e-11	3.63e-11	2.42e-11	2.41e-11	2.64e-11
Ba-131	S	1.72e-10	1.00e-10	5.09e-11	3.71e-11	2.48e-11	2.46e-11	2.70e-11
	F	1.57e-09	6.47e-10	2.95e-10	2.18e-10	1.69e-10	1.12e-10	1.34e-10
	M	3.20e-09	1.49e-09	8.19e-10	5.67e-10	4.22e-10	4.21e-10	4.55e-10
Ba-131m	S	3.70e-09	1.77e-09	9.85e-10	6.77e-10	5.02e-10	5.17e-10	5.55e-10
	F	2.89e-11	1.05e-11	6.24e-12	4.65e-12	4.39e-12	3.57e-12	3.87e-12
	M	3.68e-11	1.33e-11	8.03e-12	5.97e-12	5.63e-12	4.66e-12	5.04e-12
Ba-133	S	3.75e-11	1.36e-11	8.22e-12	6.10e-12	5.73e-12	4.78e-12	5.16e-12
	F	1.02e-08	2.98e-09	1.74e-09	2.46e-09	4.70e-09	1.04e-09	1.42e-09
	M	1.55e-08	8.55e-09	5.09e-09	4.00e-09	4.27e-09	2.91e-09	3.19e-09
Ba-133m	S	5.18e-08	4.47e-08	3.20e-08	2.43e-08	2.37e-08	2.55e-08	2.57e-08
	F	7.28e-10	3.34e-10	1.38e-10	9.38e-11	7.04e-11	4.73e-11	5.78e-11
	M	1.70e-09	6.75e-10	3.61e-10	2.48e-10	1.94e-10	1.69e-10	1.88e-10
Ba-135m	S	1.92e-09	7.58e-10	4.16e-10	2.86e-10	2.25e-10	2.02e-10	2.23e-10
	F	5.70e-10	2.76e-10	1.15e-10	7.86e-11	5.68e-11	4.07e-11	4.91e-11
	M	1.35e-09	5.38e-10	2.87e-10	1.99e-10	1.56e-10	1.35e-10	1.50e-10
Ba-139	S	1.50e-09	5.86e-10	3.18e-10	2.20e-10	1.73e-10	1.52e-10	1.68e-10
	F	3.43e-10	1.93e-10	8.87e-11	6.74e-11	4.33e-11	3.10e-11	3.74e-11
	M	4.41e-10	2.40e-10	1.17e-10	8.93e-11	6.08e-11	4.62e-11	5.40e-11
Ba-140	S	4.46e-10	2.43e-10	1.19e-10	9.05e-11	6.17e-11	4.71e-11	5.49e-11
	F	1.51e-08	4.28e-09	1.69e-09	1.21e-09	1.22e-09	4.80e-10	6.69e-10
	M	2.33e-08	1.05e-08	5.79e-09	3.92e-09	3.05e-09	2.93e-09	3.18e-09
Ba-141	S	2.67e-08	1.28e-08	7.25e-09	4.89e-09	3.72e-09	3.77e-09	4.05e-09
	F	1.76e-10	1.01e-10	4.67e-11	3.52e-11	2.30e-11	1.74e-11	2.06e-11
	M	2.17e-10	1.19e-10	5.81e-11	4.39e-11	2.98e-11	2.36e-11	2.73e-11
Ba-142	S	2.20e-10	1.21e-10	5.91e-11	4.46e-11	3.03e-11	2.41e-11	2.78e-11
	F	9.32e-11	5.40e-11	2.56e-11	1.92e-11	1.30e-11	1.06e-11	1.22e-11
	M	1.12e-10	6.31e-11	3.11e-11	2.34e-11	1.63e-11	1.35e-11	1.53e-11
Lanthanum	S	1.13e-10	6.35e-11	3.14e-11	2.36e-11	1.65e-11	1.37e-11	1.55e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
La-129	F	6.89e-11	3.93e-11	1.91e-11	1.44e-11	9.76e-12	8.04e-12	9.20e-12
	M	6.93e-11	3.95e-11	1.93e-11	1.46e-11	9.89e-12	8.16e-12	9.33e-12
	S	6.95e-11	3.96e-11	1.93e-11	1.46e-11	9.92e-12	8.19e-12	9.36e-12
La-131	F	1.16e-10	6.08e-11	3.07e-11	2.30e-11	1.64e-11	1.37e-11	1.55e-11
	M	1.23e-10	6.41e-11	3.27e-11	2.44e-11	1.75e-11	1.49e-11	1.67e-11
	S	1.25e-10	6.51e-11	3.34e-11	2.49e-11	1.78e-11	1.52e-11	1.71e-11
La-132	F	9.20e-10	5.18e-10	2.49e-10	1.84e-10	1.19e-10	1.04e-10	1.19e-10
	M	9.68e-10	5.36e-10	2.60e-10	1.92e-10	1.25e-10	1.10e-10	1.25e-10
	S	9.79e-10	5.41e-10	2.62e-10	1.94e-10	1.27e-10	1.12e-10	1.27e-10
La-132m	F	1.02e-10	5.26e-11	2.64e-11	1.95e-11	1.38e-11	1.20e-11	1.35e-11
	M	1.06e-10	5.41e-11	2.73e-11	2.02e-11	1.43e-11	1.25e-11	1.40e-11
	S	1.06e-10	5.44e-11	2.75e-11	2.03e-11	1.44e-11	1.26e-11	1.41e-11
La-133	F	7.11e-11	3.94e-11	1.90e-11	1.38e-11	9.45e-12	8.26e-12	9.34e-12
	M	7.46e-11	4.08e-11	1.99e-11	1.44e-11	9.91e-12	8.77e-12	9.87e-12
	S	7.69e-11	4.26e-11	2.12e-11	1.54e-11	1.08e-11	9.83e-12	1.09e-11
La-135	F	5.20e-11	3.51e-11	1.62e-11	1.14e-11	6.85e-12	6.72e-12	7.58e-12
	M	5.88e-11	3.80e-11	1.78e-11	1.26e-11	7.70e-12	7.55e-12	8.48e-12
	S	6.05e-11	3.88e-11	1.83e-11	1.29e-11	7.92e-12	7.76e-12	8.71e-12
La-137	F	1.13e-08	1.00e-08	7.33e-09	5.78e-09	5.96e-09	6.23e-09	6.26e-09
	M	8.37e-09	7.72e-09	5.59e-09	4.40e-09	4.45e-09	4.70e-09	4.72e-09
	S	1.22e-08	1.22e-08	1.00e-08	8.33e-09	8.46e-09	8.71e-09	8.74e-09
La-138	F	2.16e-07	1.96e-07	1.58e-07	1.34e-07	1.43e-07	1.47e-07	1.47e-07
	M	1.53e-07	1.45e-07	1.17e-07	9.87e-08	1.04e-07	1.09e-07	1.09e-07
	S	1.71e-07	1.74e-07	1.49e-07	1.28e-07	1.33e-07	1.38e-07	1.38e-07
La-140	F	3.74e-09	2.23e-09	1.09e-09	7.61e-10	5.07e-10	4.80e-10	5.36e-10
	M	4.93e-09	2.63e-09	1.35e-09	9.53e-10	6.52e-10	6.31e-10	6.96e-10
	S	5.23e-09	2.73e-09	1.42e-09	1.00e-09	6.89e-10	6.70e-10	7.37e-10
La-141	F	1.04e-09	5.46e-10	2.59e-10	1.94e-10	1.30e-10	1.00e-10	1.17e-10
	M	1.12e-09	5.72e-10	2.77e-10	2.07e-10	1.40e-10	1.11e-10	1.29e-10
	S	1.14e-09	5.80e-10	2.83e-10	2.11e-10	1.43e-10	1.14e-10	1.32e-10
La-142	F	5.31e-10	2.96e-10	1.45e-10	1.10e-10	7.34e-11	6.01e-11	6.90e-11
	M	5.42e-10	3.01e-10	1.48e-10	1.12e-10	7.51e-11	6.17e-11	7.08e-11
	S	5.44e-10	3.02e-10	1.49e-10	1.12e-10	7.55e-11	6.21e-11	7.12e-11
La-143	F	1.36e-10	7.78e-11	3.73e-11	2.81e-11	1.87e-11	1.47e-11	1.71e-11
	M	1.45e-10	8.07e-11	3.93e-11	2.96e-11	1.99e-11	1.59e-11	1.84e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Cerium	S	1.48e-10	8.15e-11	3.99e-11	3.00e-11	2.02e-11	1.62e-11	1.87e-11
	F	2.12e-10	1.22e-10	6.09e-11	4.65e-11	3.08e-11	2.49e-11	2.87e-11
	M	2.13e-10	1.23e-10	6.14e-11	4.68e-11	3.11e-11	2.52e-11	2.90e-11
Ce-130	S	2.14e-10	1.23e-10	6.16e-11	4.69e-11	3.12e-11	2.53e-11	2.91e-11
	F	7.11e-11	3.99e-11	1.96e-11	1.48e-11	1.02e-11	8.50e-12	9.66e-12
	M	7.25e-11	4.05e-11	2.00e-11	1.51e-11	1.04e-11	8.72e-12	9.90e-12
Ce-131	S	7.29e-11	4.07e-11	2.01e-11	1.52e-11	1.04e-11	8.79e-12	9.97e-12
	F	6.14e-10	3.49e-10	1.66e-10	1.20e-10	7.77e-11	7.12e-11	8.04e-11
	M	6.71e-10	3.70e-10	1.79e-10	1.29e-10	8.49e-11	7.87e-11	8.84e-11
Ce-132	S	6.85e-10	3.75e-10	1.82e-10	1.32e-10	8.67e-11	8.06e-11	9.04e-11
	F	3.17e-10	1.52e-10	7.71e-11	5.74e-11	4.09e-11	3.36e-11	3.82e-11
	M	3.29e-10	1.56e-10	7.95e-11	5.91e-11	4.24e-11	3.50e-11	3.97e-11
Ce-133	S	3.32e-10	1.57e-10	8.05e-11	5.99e-11	4.31e-11	3.57e-11	4.04e-11
	F	4.48e-10	2.56e-10	1.27e-10	9.19e-11	6.09e-11	5.90e-11	6.53e-11
	M	4.80e-10	2.67e-10	1.34e-10	9.66e-11	6.45e-11	6.27e-11	6.93e-11
Ce-133m	S	4.89e-10	2.71e-10	1.36e-10	9.88e-11	6.64e-11	6.48e-11	7.14e-11
	F	4.87e-09	2.85e-09	1.35e-09	9.03e-10	6.15e-10	5.55e-10	6.28e-10
	M	7.32e-09	3.73e-09	1.94e-09	1.34e-09	9.41e-10	9.05e-10	9.98e-10
Ce-134	S	7.97e-09	3.97e-09	2.09e-09	1.45e-09	1.03e-09	1.00e-09	1.10e-09
	F	5.06e-10	3.35e-10	1.64e-10	1.18e-10	7.52e-11	7.61e-11	8.38e-11
	M	5.79e-10	3.64e-10	1.80e-10	1.30e-10	8.38e-11	8.48e-11	9.32e-11
Ce-135	S	5.98e-10	3.71e-10	1.84e-10	1.33e-10	8.59e-11	8.70e-11	9.56e-11
	F	3.33e-11	2.10e-11	9.71e-12	6.74e-12	4.17e-12	4.04e-12	4.56e-12
	M	3.55e-11	2.19e-11	1.03e-11	7.15e-12	4.46e-12	4.33e-12	4.87e-12
Ce-137	S	3.61e-11	2.21e-11	1.04e-11	7.25e-12	4.53e-12	4.41e-12	4.95e-12
	F	1.11e-09	5.32e-10	2.62e-10	1.79e-10	1.36e-10	1.16e-10	1.31e-10
	M	1.69e-09	6.84e-10	3.67e-10	2.53e-10	1.97e-10	1.75e-10	1.94e-10
Ce-137m	S	1.84e-09	7.23e-10	3.94e-10	2.71e-10	2.12e-10	1.90e-10	2.10e-10
	F	6.95e-09	4.05e-09	1.75e-09	1.02e-09	8.03e-10	8.65e-10	9.34e-10
	M	7.18e-09	4.23e-09	2.18e-09	1.41e-09	1.08e-09	1.14e-09	1.22e-09
Ce-139	S	7.80e-09	4.82e-09	2.78e-09	1.90e-09	1.44e-09	1.51e-09	1.60e-09
	F	5.62e-09	3.04e-09	1.24e-09	6.91e-10	5.78e-10	4.63e-10	5.38e-10
	M	1.05e-08	4.49e-09	2.40e-09	1.55e-09	1.23e-09	1.14e-09	1.25e-09
Ce-141	S	1.24e-08	5.17e-09	2.93e-09	1.94e-09	1.53e-09	1.44e-09	1.57e-09

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Ce-143	F	2.40e-09	1.24e-09	5.80e-10	3.87e-10	2.79e-10	2.35e-10	2.69e-10
	M	3.63e-09	1.60e-09	8.37e-10	5.74e-10	4.24e-10	3.84e-10	4.27e-10
	S	3.98e-09	1.70e-09	9.12e-10	6.28e-10	4.66e-10	4.27e-10	4.73e-10
Ce-144	F	1.31e-07	9.97e-08	4.42e-08	2.44e-08	2.18e-08	1.70e-08	1.94e-08
	M	1.73e-07	1.13e-07	5.99e-08	3.80e-08	3.13e-08	2.90e-08	3.15e-08
	S	2.37e-07	1.57e-07	9.74e-08	6.66e-08	5.39e-08	5.50e-08	5.80e-08
Praseodymium								
Pr-134	F	1.05e-10	6.12e-11	2.95e-11	2.22e-11	1.46e-11	1.24e-11	1.42e-11
	M	1.11e-10	6.35e-11	3.11e-11	2.33e-11	1.54e-11	1.33e-11	1.51e-11
	S	1.12e-10	6.41e-11	3.15e-11	2.36e-11	1.57e-11	1.35e-11	1.53e-11
Pr-134m	F	1.89e-10	1.10e-10	5.35e-11	4.04e-11	2.62e-11	2.14e-11	2.47e-11
	M	1.98e-10	1.14e-10	5.60e-11	4.22e-11	2.75e-11	2.28e-11	2.62e-11
	S	2.01e-10	1.15e-10	5.66e-11	4.27e-11	2.79e-11	2.32e-11	2.66e-11
Pr-135	F	1.20e-10	6.80e-11	3.36e-11	2.54e-11	1.70e-11	1.40e-11	1.60e-11
	M	1.22e-10	6.90e-11	3.42e-11	2.58e-11	1.73e-11	1.43e-11	1.64e-11
	S	1.23e-10	6.93e-11	3.43e-11	2.59e-11	1.74e-11	1.44e-11	1.65e-11
Pr-136	F	7.70e-11	4.52e-11	2.19e-11	1.67e-11	1.09e-11	9.05e-12	1.04e-11
	M	7.73e-11	4.53e-11	2.20e-11	1.68e-11	1.09e-11	9.10e-12	1.04e-11
	S	7.74e-11	4.54e-11	2.20e-11	1.68e-11	1.09e-11	9.11e-12	1.05e-11
Pr-137	F	1.11e-10	6.23e-11	3.03e-11	2.28e-11	1.53e-11	1.24e-11	1.43e-11
	M	1.13e-10	6.32e-11	3.09e-11	2.32e-11	1.57e-11	1.28e-11	1.47e-11
	S	1.13e-10	6.34e-11	3.10e-11	2.33e-11	1.57e-11	1.28e-11	1.47e-11
Pr-138m	F	3.22e-10	1.87e-10	9.24e-11	6.84e-11	4.53e-11	4.15e-11	4.65e-11
	M	3.29e-10	1.90e-10	9.43e-11	6.98e-11	4.64e-11	4.26e-11	4.76e-11
	S	3.31e-10	1.91e-10	9.48e-11	7.01e-11	4.67e-11	4.29e-11	4.79e-11
Pr-139	F	9.01e-11	4.94e-11	2.34e-11	1.68e-11	1.15e-11	1.02e-11	1.15e-11
	M	9.50e-11	5.12e-11	2.50e-11	1.80e-11	1.25e-11	1.11e-11	1.25e-11
	S	9.70e-11	5.23e-11	2.60e-11	1.88e-11	1.31e-11	1.18e-11	1.32e-11
Pr-142	F	2.37e-09	1.22e-09	5.82e-10	4.14e-10	2.77e-10	2.28e-10	2.64e-10
	M	2.91e-09	1.40e-09	6.99e-10	4.98e-10	3.43e-10	2.97e-10	3.37e-10
	S	3.05e-09	1.44e-09	7.28e-10	5.19e-10	3.59e-10	3.14e-10	3.55e-10
Pr-142m	F	2.95e-11	1.52e-11	7.20e-12	5.10e-12	3.41e-12	2.82e-12	3.27e-12
	M	3.65e-11	1.74e-11	8.70e-12	6.19e-12	4.26e-12	3.70e-12	4.20e-12
	S	3.82e-11	1.79e-11	9.07e-12	6.46e-12	4.47e-12	3.92e-12	4.43e-12
Pr-143	F	4.48e-09	2.50e-09	1.04e-09	6.00e-10	4.84e-10	3.69e-10	4.35e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Pr-144	M	8.54e-09	3.73e-09	1.99e-09	1.30e-09	1.01e-09	9.28e-10	1.02e-09
	S	9.87e-09	4.16e-09	2.31e-09	1.54e-09	1.19e-09	1.12e-09	1.23e-09
	F	1.35e-10	7.85e-11	3.79e-11	2.90e-11	1.92e-11	1.48e-11	1.73e-11
	M	1.36e-10	7.88e-11	3.81e-11	2.91e-11	1.93e-11	1.49e-11	1.74e-11
Pr-145	S	1.36e-10	7.89e-11	3.81e-11	2.92e-11	1.93e-11	1.49e-11	1.74e-11
	F	1.00e-09	5.10e-10	2.44e-10	1.80e-10	1.23e-10	9.67e-11	1.13e-10
	M	1.09e-09	5.37e-10	2.62e-10	1.93e-10	1.34e-10	1.07e-10	1.24e-10
	S	1.11e-09	5.43e-10	2.66e-10	1.96e-10	1.36e-10	1.10e-10	1.27e-10
Pr-146	F	2.09e-10	1.22e-10	5.93e-11	4.53e-11	2.97e-11	2.33e-11	2.71e-11
	M	2.10e-10	1.22e-10	5.97e-11	4.56e-11	3.00e-11	2.35e-11	2.74e-11
	S	2.11e-10	1.23e-10	5.98e-11	4.57e-11	3.00e-11	2.36e-11	2.75e-11
	F	9.93e-11	5.50e-11	2.69e-11	2.03e-11	1.43e-11	1.14e-11	1.31e-11
Pr-147	M	1.04e-10	5.63e-11	2.78e-11	2.09e-11	1.48e-11	1.19e-11	1.36e-11
	S	1.05e-10	5.67e-11	2.81e-11	2.11e-11	1.49e-11	1.21e-11	1.38e-11
Neodymium								
Nd-135	F	1.61e-10	8.97e-11	4.44e-11	3.36e-11	2.28e-11	1.85e-11	2.12e-11
	M	1.63e-10	9.05e-11	4.48e-11	3.40e-11	2.31e-11	1.88e-11	2.15e-11
	S	1.63e-10	9.07e-11	4.50e-11	3.41e-11	2.32e-11	1.88e-11	2.16e-11
	F	3.24e-10	1.75e-10	8.78e-11	6.64e-11	4.45e-11	3.66e-11	4.19e-11
Nd-136	M	3.29e-10	1.77e-10	8.91e-11	6.73e-11	4.52e-11	3.73e-11	4.27e-11
	S	3.30e-10	1.78e-10	8.94e-11	6.76e-11	4.54e-11	3.75e-11	4.29e-11
	F	1.58e-10	8.70e-11	4.30e-11	3.24e-11	2.18e-11	1.81e-11	2.07e-11
	M	1.61e-10	8.81e-11	4.37e-11	3.29e-11	2.22e-11	1.85e-11	2.11e-11
Nd-137	S	1.61e-10	8.83e-11	4.39e-11	3.30e-11	2.23e-11	1.85e-11	2.11e-11
	F	1.50e-09	8.04e-10	3.81e-10	2.83e-10	1.84e-10	1.50e-10	1.74e-10
	M	1.59e-09	8.38e-10	4.02e-10	2.98e-10	1.96e-10	1.62e-10	1.87e-10
	S	1.62e-09	8.46e-10	4.07e-10	3.02e-10	1.99e-10	1.65e-10	1.90e-10
Nd-138	F	6.01e-11	3.44e-11	1.68e-11	1.26e-11	8.50e-12	6.99e-12	8.01e-12
	M	6.11e-11	3.48e-11	1.71e-11	1.29e-11	8.69e-12	7.16e-12	8.20e-12
	S	6.14e-11	3.50e-11	1.72e-11	1.30e-11	8.78e-12	7.25e-12	8.29e-12
	F	5.95e-10	3.16e-10	1.59e-10	1.14e-10	7.92e-11	7.50e-11	8.29e-11
Nd-139m	M	6.53e-10	3.34e-10	1.71e-10	1.23e-10	8.60e-11	8.16e-11	9.00e-11
	S	6.68e-10	3.39e-10	1.74e-10	1.26e-10	8.81e-11	8.38e-11	9.23e-11
	F	3.71e-09	2.17e-09	1.03e-09	6.86e-10	4.70e-10	4.20e-10	4.76e-10
	M	5.62e-09	2.86e-09	1.49e-09	1.03e-09	7.27e-10	6.98e-10	7.69e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Nd-141	S	6.14e-09	3.05e-09	1.62e-09	1.12e-09	7.96e-10	7.73e-10	8.48e-10
	F	2.13e-11	1.16e-11	5.68e-12	4.12e-12	2.81e-12	2.55e-12	2.86e-12
	M	2.20e-11	1.18e-11	5.84e-12	4.24e-12	2.91e-12	2.65e-12	2.96e-12
Nd-144	S	2.22e-11	1.19e-11	5.88e-12	4.27e-12	2.94e-12	2.67e-12	2.98e-12
	F	1.89e-05	1.59e-05	9.80e-06	6.94e-06	6.62e-06	6.55e-06	6.77e-06
	M	1.42e-05	1.22e-05	7.63e-06	5.39e-06	5.03e-06	5.03e-06	5.20e-06
Nd-147	S	1.76e-05	1.67e-05	1.24e-05	9.42e-06	9.10e-06	9.25e-06	9.41e-06
	F	4.32e-09	2.23e-09	9.88e-10	5.92e-10	4.74e-10	3.91e-10	4.48e-10
	M	8.86e-09	3.45e-09	1.89e-09	1.25e-09	9.87e-10	9.12e-10	1.00e-09
Nd-149	S	1.02e-08	3.87e-09	2.21e-09	1.48e-09	1.17e-09	1.10e-09	1.20e-09
	F	4.47e-10	2.27e-10	1.12e-10	8.31e-11	6.14e-11	4.91e-11	5.59e-11
	M	4.97e-10	2.41e-10	1.23e-10	9.04e-11	6.75e-11	5.50e-11	6.22e-11
Nd-151	S	5.10e-10	2.45e-10	1.25e-10	9.23e-11	6.90e-11	5.65e-11	6.38e-11
	F	8.26e-11	4.62e-11	2.27e-11	1.70e-11	1.21e-11	9.93e-12	1.13e-11
	M	8.80e-11	4.77e-11	2.37e-11	1.77e-11	1.27e-11	1.05e-11	1.19e-11
Nd-152	S	8.93e-11	4.80e-11	2.39e-11	1.78e-11	1.28e-11	1.06e-11	1.20e-11
	F	1.45e-10	8.43e-11	4.13e-11	3.14e-11	2.17e-11	1.71e-11	1.97e-11
	M	1.46e-10	8.47e-11	4.15e-11	3.16e-11	2.18e-11	1.72e-11	1.98e-11
Promethium Pm-141	S	1.46e-10	8.48e-11	4.16e-11	3.16e-11	2.18e-11	1.72e-11	1.98e-11
	F	9.23e-11	5.37e-11	2.61e-11	1.99e-11	1.31e-11	1.04e-11	1.21e-11
	M	9.30e-11	5.40e-11	2.63e-11	2.01e-11	1.32e-11	1.05e-11	1.22e-11
Pm-143	S	9.31e-11	5.41e-11	2.64e-11	2.01e-11	1.32e-11	1.05e-11	1.22e-11
	F	1.19e-08	7.11e-09	3.57e-09	2.16e-09	1.67e-09	2.00e-09	2.10e-09
	M	8.91e-09	6.09e-09	3.34e-09	2.15e-09	1.65e-09	1.96e-09	2.04e-09
Pm-144	S	7.83e-09	6.14e-09	3.76e-09	2.60e-09	2.02e-09	2.34e-09	2.42e-09
	F	6.45e-08	4.06e-08	2.11e-08	1.28e-08	1.01e-08	1.22e-08	1.27e-08
	M	4.67e-08	3.31e-08	1.86e-08	1.19e-08	9.37e-09	1.13e-08	1.17e-08
Pm-145	S	3.88e-08	3.15e-08	1.99e-08	1.39e-08	1.11e-08	1.31e-08	1.34e-08
	F	1.17e-08	9.67e-09	6.10e-09	4.31e-09	4.25e-09	4.58e-09	4.64e-09
	M	9.05e-09	7.64e-09	4.85e-09	3.45e-09	3.31e-09	3.59e-09	3.64e-09
Pm-146	S	1.07e-08	9.80e-09	7.17e-09	5.57e-09	5.49e-09	5.83e-09	5.87e-09
	F	9.46e-08	7.49e-08	4.42e-08	2.89e-08	2.69e-08	2.93e-08	3.00e-08
	M	7.27e-08	5.91e-08	3.59e-08	2.39e-08	2.18e-08	2.40e-08	2.46e-08
	S	7.27e-08	6.31e-08	4.38e-08	3.20e-08	3.03e-08	3.32e-08	3.36e-08

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Pm-147	F	1.54e-08	1.14e-08	4.98e-09	2.77e-09	2.29e-09	1.96e-09	2.22e-09
	M	1.64e-08	1.06e-08	5.26e-09	3.20e-09	2.57e-09	2.34e-09	2.58e-09
	S	2.00e-08	1.33e-08	8.19e-09	5.45e-09	4.43e-09	4.36e-09	4.64e-09
Pm-148	F	5.91e-09	3.40e-09	1.58e-09	1.01e-09	7.30e-10	6.32e-10	7.20e-10
	M	9.94e-09	4.78e-09	2.54e-09	1.73e-09	1.27e-09	1.21e-09	1.33e-09
	S	1.11e-08	5.18e-09	2.82e-09	1.93e-09	1.42e-09	1.38e-09	1.51e-09
Pm-148m	F	2.04e-08	1.12e-08	5.23e-09	3.20e-09	2.48e-09	2.66e-09	2.86e-09
	M	2.43e-08	1.34e-08	7.30e-09	4.88e-09	3.69e-09	3.97e-09	4.22e-09
	S	2.66e-08	1.49e-08	8.53e-09	5.85e-09	4.39e-09	4.74e-09	5.01e-09
Pm-149	F	1.94e-09	9.63e-10	4.51e-10	3.01e-10	2.19e-10	1.80e-10	2.07e-10
	M	3.07e-09	1.28e-09	6.73e-10	4.60e-10	3.45e-10	3.08e-10	3.43e-10
	S	3.36e-09	1.36e-09	7.31e-10	5.01e-10	3.78e-10	3.41e-10	3.78e-10
Pm-150	F	7.67e-10	4.16e-10	2.02e-10	1.51e-10	1.02e-10	8.27e-11	9.53e-11
	M	7.94e-10	4.26e-10	2.08e-10	1.56e-10	1.06e-10	8.64e-11	9.92e-11
	S	8.00e-10	4.28e-10	2.10e-10	1.57e-10	1.07e-10	8.73e-11	1.00e-10
Pm-151	F	1.57e-09	7.49e-10	3.69e-10	2.57e-10	1.87e-10	1.62e-10	1.83e-10
	M	2.26e-09	9.27e-10	4.91e-10	3.42e-10	2.57e-10	2.31e-10	2.56e-10
	S	2.43e-09	9.72e-10	5.22e-10	3.64e-10	2.75e-10	2.49e-10	2.76e-10
Samarium								
Sm-140	F	2.12e-10	1.24e-10	5.98e-11	4.54e-11	2.96e-11	2.38e-11	2.76e-11
	M	2.19e-10	1.26e-10	6.15e-11	4.66e-11	3.05e-11	2.48e-11	2.86e-11
	S	2.21e-10	1.27e-10	6.20e-11	4.70e-11	3.08e-11	2.50e-11	2.89e-11
Sm-141	F	9.81e-11	5.72e-11	2.78e-11	2.12e-11	1.39e-11	1.12e-11	1.30e-11
	M	9.87e-11	5.75e-11	2.80e-11	2.14e-11	1.40e-11	1.13e-11	1.31e-11
	S	9.88e-11	5.76e-11	2.80e-11	2.14e-11	1.40e-11	1.13e-11	1.31e-11
Sm-141m	F	1.85e-10	1.07e-10	5.30e-11	4.04e-11	2.68e-11	2.18e-11	2.51e-11
	M	1.87e-10	1.08e-10	5.35e-11	4.07e-11	2.71e-11	2.21e-11	2.54e-11
	S	1.87e-10	1.08e-10	5.36e-11	4.08e-11	2.72e-11	2.22e-11	2.55e-11
Sm-142	F	5.54e-10	3.12e-10	1.51e-10	1.15e-10	7.45e-11	5.81e-11	6.80e-11
	M	5.63e-10	3.15e-10	1.53e-10	1.17e-10	7.59e-11	5.94e-11	6.94e-11
	S	5.65e-10	3.16e-10	1.54e-10	1.17e-10	7.63e-11	5.98e-11	6.98e-11
Sm-145	F	9.29e-09	5.99e-09	2.78e-09	1.65e-09	1.37e-09	1.42e-09	1.52e-09
	M	8.15e-09	5.47e-09	2.81e-09	1.77e-09	1.41e-09	1.46e-09	1.56e-09
	S	8.56e-09	6.23e-09	3.71e-09	2.51e-09	1.98e-09	2.07e-09	2.18e-09
Sm-146	F	2.54e-05	2.13e-05	1.31e-05	9.25e-06	8.81e-06	8.71e-06	9.01e-06

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Sm-147	M	2.03e-05	1.67e-05	1.04e-05	7.36e-06	6.83e-06	6.83e-06	7.07e-06
	S	2.59e-05	2.32e-05	1.72e-05	1.30e-05	1.25e-05	1.27e-05	1.29e-05
	F	2.31e-05	1.94e-05	1.19e-05	8.44e-06	8.04e-06	7.95e-06	8.22e-06
	M	1.79e-05	1.51e-05	9.41e-06	6.64e-06	6.18e-06	6.18e-06	6.39e-06
Sm-148	S	2.26e-05	2.08e-05	1.54e-05	1.17e-05	1.13e-05	1.14e-05	1.16e-05
	F	1.98e-05	1.66e-05	1.02e-05	7.24e-06	6.90e-06	6.83e-06	7.06e-06
	M	1.49e-05	1.28e-05	7.97e-06	5.63e-06	5.25e-06	5.25e-06	5.43e-06
	S	1.85e-05	1.74e-05	1.30e-05	9.84e-06	9.51e-06	9.66e-06	9.83e-06
Sm-151	F	9.42e-09	7.84e-09	4.72e-09	3.33e-09	3.22e-09	3.25e-09	3.34e-09
	M	7.75e-09	6.24e-09	3.81e-09	2.70e-09	2.54e-09	2.58e-09	2.66e-09
	S	9.76e-09	8.48e-09	6.14e-09	4.66e-09	4.45e-09	4.54e-09	4.63e-09
	F	1.84e-09	7.59e-10	3.81e-10	2.56e-10	2.00e-10	1.70e-10	1.91e-10
Sm-153	M	3.29e-09	1.10e-09	6.18e-10	4.21e-10	3.38e-10	3.01e-10	3.32e-10
	S	3.66e-09	1.19e-09	6.79e-10	4.63e-10	3.73e-10	3.35e-10	3.69e-10
	F	1.08e-10	6.07e-11	2.99e-11	2.27e-11	1.63e-11	1.28e-11	1.47e-11
	M	1.09e-10	6.11e-11	3.02e-11	2.28e-11	1.64e-11	1.29e-11	1.48e-11
Sm-155	S	1.09e-10	6.12e-11	3.03e-11	2.29e-11	1.65e-11	1.30e-11	1.49e-11
	F	8.36e-10	3.89e-10	1.93e-10	1.30e-10	1.03e-10	8.81e-11	9.85e-11
	M	1.15e-09	4.87e-10	2.64e-10	1.83e-10	1.44e-10	1.31e-10	1.44e-10
	S	1.25e-09	5.20e-10	2.88e-10	2.00e-10	1.58e-10	1.45e-10	1.58e-10
Europium								
Eu-145	F	1.90e-09	1.28e-09	6.39e-10	4.34e-10	2.96e-10	3.11e-10	3.37e-10
	M	2.40e-09	1.55e-09	8.22e-10	5.76e-10	3.95e-10	4.29e-10	4.59e-10
	S	2.55e-09	1.65e-09	8.92e-10	6.30e-10	4.34e-10	4.74e-10	5.06e-10
	F	2.86e-09	1.99e-09	1.00e-09	6.96e-10	4.60e-10	4.84e-10	5.26e-10
Eu-146	M	3.59e-09	2.41e-09	1.26e-09	8.96e-10	5.98e-10	6.51e-10	6.99e-10
	S	3.80e-09	2.53e-09	1.34e-09	9.52e-10	6.37e-10	6.98e-10	7.47e-10
	F	3.16e-09	1.67e-09	7.59e-10	4.70e-10	3.58e-10	3.58e-10	3.92e-10
	M	4.66e-09	2.29e-09	1.25e-09	8.41e-10	6.34e-10	6.60e-10	7.07e-10
Eu-147	S	5.20e-09	2.55e-09	1.45e-09	9.95e-10	7.46e-10	7.85e-10	8.37e-10
	F	2.05e-08	1.07e-08	4.70e-09	2.91e-09	2.17e-09	2.40e-09	2.59e-09
	M	1.79e-08	1.13e-08	6.03e-09	4.09e-09	3.01e-09	3.47e-09	3.64e-09
	S	1.75e-08	1.21e-08	7.07e-09	4.96e-09	3.64e-09	4.26e-09	4.43e-09
Eu-148	F	2.96e-09	1.60e-09	6.09e-10	3.38e-10	2.72e-10	2.42e-10	2.77e-10
	M	2.64e-09	1.65e-09	7.92e-10	4.97e-10	3.71e-10	3.68e-10	4.03e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Eu-150	S	2.66e-09	1.83e-09	1.00e-09	6.63e-10	4.79e-10	4.99e-10	5.36e-10
	F	1.81e-07	1.47e-07	9.17e-08	7.33e-08	7.93e-08	7.99e-08	8.06e-08
	M	1.29e-07	1.11e-07	7.18e-08	5.71e-08	6.02e-08	6.20e-08	6.24e-08
Eu-150m	S	1.59e-07	1.58e-07	1.30e-07	1.10e-07	1.15e-07	1.22e-07	1.21e-07
	F	8.79e-10	4.17e-10	2.01e-10	1.44e-10	1.04e-10	8.52e-11	9.74e-11
	M	1.06e-09	4.67e-10	2.37e-10	1.69e-10	1.25e-10	1.05e-10	1.19e-10
Eu-152	S	1.11e-09	4.80e-10	2.45e-10	1.75e-10	1.30e-10	1.10e-10	1.24e-10
	F	1.50e-07	1.19e-07	6.48e-08	4.58e-08	4.55e-08	4.49e-08	4.64e-08
	M	1.15e-07	9.37e-08	5.38e-08	3.82e-08	3.67e-08	3.73e-08	3.84e-08
Eu-152m	S	1.38e-07	1.26e-07	9.40e-08	7.40e-08	7.44e-08	8.03e-08	8.04e-08
	F	1.09e-09	5.58e-10	2.68e-10	1.95e-10	1.32e-10	1.08e-10	1.25e-10
	M	1.23e-09	6.02e-10	2.98e-10	2.16e-10	1.49e-10	1.26e-10	1.44e-10
Eu-152n	S	1.27e-09	6.13e-10	3.05e-10	2.22e-10	1.54e-10	1.30e-10	1.48e-10
	F	5.54e-11	1.68e-11	9.98e-12	6.90e-12	5.91e-12	5.38e-12	5.84e-12
	M	5.80e-11	1.71e-11	1.03e-11	7.09e-12	6.06e-12	5.52e-12	5.99e-12
Eu-154	S	5.91e-11	1.76e-11	1.09e-11	7.64e-12	6.64e-12	6.16e-12	6.62e-12
	F	1.88e-07	1.48e-07	7.41e-08	4.90e-08	4.58e-08	4.32e-08	4.57e-08
	M	1.53e-07	1.20e-07	6.46e-08	4.35e-08	3.92e-08	3.84e-08	4.04e-08
Eu-154m	S	1.84e-07	1.59e-07	1.13e-07	8.47e-08	8.17e-08	8.76e-08	8.85e-08
	F	1.96e-11	7.49e-12	4.18e-12	2.88e-12	2.40e-12	2.19e-12	2.38e-12
	M	1.96e-11	7.25e-12	4.13e-12	2.85e-12	2.37e-12	2.18e-12	2.37e-12
Eu-155	S	2.01e-11	7.66e-12	4.63e-12	3.28e-12	2.81e-12	2.69e-12	2.87e-12
	F	2.40e-08	1.77e-08	7.45e-09	4.36e-09	3.80e-09	3.36e-09	3.72e-09
	M	2.24e-08	1.54e-08	7.39e-09	4.60e-09	3.84e-09	3.58e-09	3.90e-09
Eu-156	S	2.67e-08	1.97e-08	1.26e-08	8.61e-09	7.41e-09	7.61e-09	7.93e-09
	F	9.33e-09	5.39e-09	2.39e-09	1.44e-09	1.12e-09	9.71e-10	1.10e-09
	M	1.64e-08	7.94e-09	4.32e-09	2.89e-09	2.20e-09	2.17e-09	2.35e-09
Eu-157	S	1.88e-08	8.89e-09	5.02e-09	3.42e-09	2.59e-09	2.60e-09	2.80e-09
	F	1.33e-09	6.40e-10	3.11e-10	2.21e-10	1.57e-10	1.33e-10	1.51e-10
	M	1.65e-09	7.28e-10	3.72e-10	2.64e-10	1.92e-10	1.68e-10	1.88e-10
Eu-158	S	1.73e-09	7.50e-10	3.87e-10	2.75e-10	2.01e-10	1.76e-10	1.97e-10
	F	3.10e-10	1.69e-10	8.43e-11	6.40e-11	4.43e-11	3.52e-11	4.04e-11
	M	3.14e-10	1.71e-10	8.53e-11	6.48e-11	4.49e-11	3.58e-11	4.11e-11
Eu-159	S	3.15e-10	1.71e-10	8.56e-11	6.50e-11	4.51e-11	3.59e-11	4.12e-11
	F	1.40e-10	7.67e-11	3.76e-11	2.83e-11	1.96e-11	1.55e-11	1.79e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
	M	1.46e-10	7.85e-11	3.88e-11	2.92e-11	2.04e-11	1.62e-11	1.86e-11
	S	1.48e-10	7.90e-11	3.91e-11	2.94e-11	2.06e-11	1.64e-11	1.88e-11
Gadolinium								
Gd-145	F	8.16e-11	4.85e-11	2.41e-11	1.81e-11	1.18e-11	1.03e-11	1.17e-11
	M	8.33e-11	4.94e-11	2.47e-11	1.86e-11	1.21e-11	1.07e-11	1.21e-11
Gd-146	S	8.38e-11	4.98e-11	2.49e-11	1.88e-11	1.22e-11	1.09e-11	1.23e-11
	F	2.71e-08	1.36e-08	5.61e-09	3.22e-09	2.56e-09	2.48e-09	2.76e-09
Gd-147	M	3.07e-08	1.60e-08	8.62e-09	5.69e-09	4.39e-09	4.67e-09	4.97e-09
	S	3.30e-08	1.80e-08	1.06e-08	7.26e-09	5.53e-09	6.06e-09	6.37e-09
Gd-148	F	1.40e-09	9.14e-10	4.43e-10	3.10e-10	2.04e-10	2.03e-10	2.24e-10
	M	1.79e-09	1.07e-09	5.48e-10	3.89e-10	2.62e-10	2.69e-10	2.93e-10
Gd-149	S	1.89e-09	1.12e-09	5.81e-10	4.13e-10	2.80e-10	2.89e-10	3.14e-10
	F	2.69e-05	2.09e-05	1.01e-05	6.46e-06	5.96e-06	5.42e-06	5.82e-06
Gd-150	M	2.50e-05	1.78e-05	9.25e-06	6.05e-06	5.33e-06	4.97e-06	5.32e-06
	S	3.57e-05	2.87e-05	2.03e-05	1.49e-05	1.40e-05	1.43e-05	1.46e-05
Gd-151	F	2.19e-09	1.23e-09	5.68e-10	3.61e-10	2.69e-10	2.52e-10	2.80e-10
	M	3.50e-09	1.69e-09	9.11e-10	6.18e-10	4.61e-10	4.64e-10	5.02e-10
Gd-152	S	3.89e-09	1.86e-09	1.03e-09	7.10e-10	5.29e-10	5.40e-10	5.81e-10
	F	2.37e-05	1.88e-05	9.28e-06	6.14e-06	5.76e-06	5.28e-06	5.62e-06
Gd-153	M	2.04e-05	1.54e-05	8.11e-06	5.41e-06	4.85e-06	4.56e-06	4.85e-06
	S	2.97e-05	2.56e-05	1.86e-05	1.40e-05	1.33e-05	1.35e-05	1.38e-05
Gd-154	F	5.06e-09	2.85e-09	1.06e-09	5.61e-10	4.65e-10	3.68e-10	4.35e-10
	M	5.00e-09	2.97e-09	1.42e-09	8.79e-10	6.76e-10	6.35e-10	7.02e-10
Gd-155	S	5.34e-09	3.37e-09	1.89e-09	1.25e-09	9.28e-10	9.38e-10	1.01e-09
	F	1.84e-05	1.46e-05	7.23e-06	4.79e-06	4.50e-06	4.13e-06	4.39e-06
Gd-156	M	1.44e-05	1.15e-05	6.05e-06	4.02e-06	3.63e-06	3.40e-06	3.61e-06
	S	2.04e-05	1.88e-05	1.38e-05	1.04e-05	9.97e-06	1.01e-05	1.03e-05
Gd-157	F	1.01e-08	5.98e-09	2.27e-09	1.22e-09	1.00e-09	8.49e-10	9.82e-10
	M	1.09e-08	6.19e-09	3.00e-09	1.87e-09	1.47e-09	1.40e-09	1.54e-09
Gd-158	S	1.23e-08	7.33e-09	4.29e-09	2.90e-09	2.23e-09	2.28e-09	2.43e-09
	F	1.11e-09	5.12e-10	2.49e-10	1.75e-10	1.29e-10	1.06e-10	1.21e-10
Gd-159	M	1.45e-09	6.02e-10	3.12e-10	2.19e-10	1.65e-10	1.42e-10	1.59e-10
	S	1.54e-09	6.25e-10	3.28e-10	2.31e-10	1.74e-10	1.51e-10	1.69e-10
Terbium								
Tb-147	F	3.21e-10	1.87e-10	9.22e-11	6.80e-11	4.48e-11	4.05e-11	4.55e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Tb-148	M	3.44e-10	1.96e-10	9.82e-11	7.25e-11	4.81e-11	4.43e-11	4.95e-11
	S	3.50e-10	1.98e-10	1.00e-10	7.38e-11	4.91e-11	4.54e-11	5.06e-11
	F	3.84e-10	2.29e-10	1.12e-10	8.29e-11	5.61e-11	4.69e-11	5.35e-11
	M	3.85e-10	2.26e-10	1.12e-10	8.32e-11	5.58e-11	4.69e-11	5.35e-11
Tb-149	S	4.02e-10	2.43e-10	1.29e-10	9.70e-11	6.93e-11	6.13e-11	6.79e-11
	F	5.21e-08	1.14e-08	7.42e-09	5.00e-09	4.46e-09	3.92e-09	4.29e-09
	M	6.12e-08	1.31e-08	8.64e-09	5.83e-09	5.21e-09	4.58e-09	5.01e-09
	S	6.35e-08	1.35e-08	8.93e-09	6.03e-09	5.39e-09	4.75e-09	5.19e-09
Tb-150	F	4.84e-10	2.82e-10	1.37e-10	1.01e-10	6.52e-11	5.95e-11	6.71e-11
	M	5.02e-10	2.89e-10	1.42e-10	1.05e-10	6.77e-11	6.23e-11	7.00e-11
Tb-151	S	5.06e-10	2.91e-10	1.43e-10	1.05e-10	6.83e-11	6.29e-11	7.06e-11
	F	9.45e-10	4.87e-10	2.45e-10	1.73e-10	1.21e-10	1.15e-10	1.27e-10
	M	1.23e-09	5.60e-10	2.95e-10	2.09e-10	1.51e-10	1.45e-10	1.59e-10
	S	1.30e-09	5.80e-10	3.10e-10	2.20e-10	1.59e-10	1.53e-10	1.68e-10
Tb-152	F	1.26e-09	7.67e-10	3.68e-10	2.64e-10	1.69e-10	1.57e-10	1.77e-10
	M	1.45e-09	8.39e-10	4.14e-10	2.99e-10	1.95e-10	1.87e-10	2.08e-10
Tb-153	S	1.49e-09	8.58e-10	4.26e-10	3.07e-10	2.01e-10	1.94e-10	2.15e-10
	F	7.87e-10	4.06e-10	1.97e-10	1.31e-10	9.46e-11	8.86e-11	9.85e-11
	M	1.29e-09	5.34e-10	2.90e-10	1.99e-10	1.48e-10	1.44e-10	1.57e-10
	S	1.43e-09	5.78e-10	3.24e-10	2.24e-10	1.68e-10	1.65e-10	1.79e-10
Tb-154	F	1.25e-09	7.95e-10	3.96e-10	2.84e-10	1.85e-10	1.83e-10	2.02e-10
	M	1.51e-09	8.81e-10	4.51e-10	3.24e-10	2.16e-10	2.18e-10	2.38e-10
Tb-155	S	1.58e-09	9.03e-10	4.65e-10	3.34e-10	2.24e-10	2.27e-10	2.48e-10
	F	7.33e-10	3.76e-10	1.80e-10	1.18e-10	8.76e-11	8.04e-11	8.96e-11
	M	1.40e-09	5.61e-10	3.09e-10	2.11e-10	1.61e-10	1.56e-10	1.70e-10
	S	1.58e-09	6.13e-10	3.45e-10	2.37e-10	1.81e-10	1.77e-10	1.92e-10
Tb-156	F	3.30e-09	1.97e-09	9.80e-10	6.64e-10	4.63e-10	4.52e-10	4.98e-10
	M	5.36e-09	2.66e-09	1.45e-09	1.01e-09	7.26e-10	7.47e-10	8.06e-10
Tb-156m	S	5.92e-09	2.85e-09	1.58e-09	1.11e-09	7.99e-10	8.30e-10	8.92e-10
	F	5.60e-10	3.09e-10	1.54e-10	1.01e-10	7.33e-11	7.11e-11	7.82e-11
	M	1.02e-09	4.57e-10	2.56e-10	1.76e-10	1.31e-10	1.35e-10	1.45e-10
	S	1.15e-09	5.00e-10	2.85e-10	1.97e-10	1.47e-10	1.53e-10	1.64e-10
Tb-156n	F	4.58e-10	1.74e-10	9.79e-11	6.82e-11	5.77e-11	5.09e-11	5.56e-11
	M	6.10e-10	2.17e-10	1.27e-10	8.96e-11	7.50e-11	6.88e-11	7.44e-11
	S	6.50e-10	2.29e-10	1.35e-10	9.54e-11	7.96e-11	7.37e-11	7.96e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Tb-157	F	3.30e-09	2.63e-09	1.37e-09	9.50e-10	9.42e-10	9.16e-10	9.52e-10
	M	2.46e-09	2.07e-09	1.12e-09	7.82e-10	7.42e-10	7.34e-10	7.63e-10
	S	3.58e-09	3.47e-09	2.61e-09	2.04e-09	2.01e-09	2.07e-09	2.09e-09
Tb-158	F	1.44e-07	1.21e-07	7.76e-08	6.40e-08	6.98e-08	7.20e-08	7.22e-08
	M	1.11e-07	9.39e-08	6.18e-08	5.04e-08	5.33e-08	5.57e-08	5.59e-08
	S	1.61e-07	1.54e-07	1.26e-07	1.05e-07	1.08e-07	1.12e-07	1.12e-07
Tb-160	F	2.62e-08	1.46e-08	5.78e-09	3.10e-09	2.55e-09	1.98e-09	2.34e-09
	M	3.20e-08	1.71e-08	8.84e-09	5.66e-09	4.40e-09	4.27e-09	4.65e-09
	S	3.60e-08	1.95e-08	1.13e-08	7.62e-09	5.82e-09	6.00e-09	6.40e-09
Tb-161	F	2.44e-09	1.09e-09	4.98e-10	2.99e-10	2.48e-10	1.92e-10	2.23e-10
	M	5.47e-09	1.84e-09	1.04e-09	6.85e-10	5.57e-10	5.01e-10	5.52e-10
	S	6.31e-09	2.06e-09	1.19e-09	7.95e-10	6.44e-10	5.89e-10	6.46e-10
Tb-163	F	8.23e-11	4.62e-11	2.32e-11	1.74e-11	1.30e-11	1.08e-11	1.21e-11
	M	8.29e-11	4.65e-11	2.33e-11	1.75e-11	1.31e-11	1.09e-11	1.22e-11
	S	8.30e-11	4.66e-11	2.34e-11	1.76e-11	1.32e-11	1.09e-11	1.22e-11
Dysprosium								
Dy-151	F	1.73e-09	3.99e-10	2.61e-10	1.81e-10	1.64e-10	1.42e-10	1.55e-10
	M	1.76e-09	4.04e-10	2.65e-10	1.83e-10	1.67e-10	1.44e-10	1.57e-10
	S	1.76e-09	4.05e-10	2.66e-10	1.84e-10	1.67e-10	1.45e-10	1.58e-10
Dy-152	F	3.52e-10	1.50e-10	7.86e-11	5.52e-11	3.94e-11	3.65e-11	4.05e-11
	M	3.98e-10	1.65e-10	8.81e-11	6.21e-11	4.48e-11	4.23e-11	4.66e-11
	S	4.10e-10	1.68e-10	9.05e-11	6.38e-11	4.61e-11	4.38e-11	4.82e-11
Dy-153	F	5.23e-10	2.37e-10	1.23e-10	8.67e-11	6.34e-11	5.95e-11	6.55e-11
	M	6.53e-10	2.70e-10	1.46e-10	1.03e-10	7.65e-11	7.26e-11	7.95e-11
	S	6.87e-10	2.79e-10	1.53e-10	1.08e-10	8.05e-11	7.67e-11	8.39e-11
Dy-154	F	2.52e-05	1.99e-05	1.00e-05	6.59e-06	6.22e-06	5.80e-06	6.15e-06
	M	2.21e-05	1.65e-05	8.79e-06	5.85e-06	5.28e-06	5.02e-06	5.32e-06
	S	3.22e-05	2.73e-05	1.99e-05	1.49e-05	1.42e-05	1.44e-05	1.47e-05
Dy-155	F	3.01e-10	1.80e-10	8.79e-11	6.25e-11	4.13e-11	4.04e-11	4.47e-11
	M	3.82e-10	2.04e-10	1.04e-10	7.43e-11	5.05e-11	5.02e-11	5.50e-11
	S	4.04e-10	2.11e-10	1.09e-10	7.75e-11	5.30e-11	5.29e-11	5.79e-11
Dy-157	F	1.18e-10	7.22e-11	3.52e-11	2.54e-11	1.64e-11	1.64e-11	1.81e-11
	M	1.28e-10	7.59e-11	3.75e-11	2.71e-11	1.77e-11	1.79e-11	1.97e-11
	S	1.31e-10	7.69e-11	3.81e-11	2.76e-11	1.80e-11	1.82e-11	2.00e-11
Dy-159	F	2.76e-09	1.53e-09	5.72e-10	3.06e-10	2.47e-10	2.06e-10	2.41e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Dy-165	M	2.65e-09	1.59e-09	7.62e-10	4.77e-10	3.63e-10	3.54e-10	3.88e-10
	S	2.79e-09	1.82e-09	1.03e-09	6.93e-10	5.14e-10	5.39e-10	5.75e-10
	F	3.91e-10	1.99e-10	9.76e-11	7.30e-11	5.33e-11	4.15e-11	4.76e-11
	M	4.06e-10	2.04e-10	1.01e-10	7.55e-11	5.55e-11	4.36e-11	4.99e-11
Dy-166	S	4.10e-10	2.05e-10	1.02e-10	7.62e-11	5.60e-11	4.41e-11	5.04e-11
	F	4.07e-09	2.04e-09	9.34e-10	5.54e-10	4.44e-10	3.42e-10	3.99e-10
	M	8.94e-09	3.40e-09	1.90e-09	1.26e-09	9.95e-10	9.25e-10	1.01e-09
	S	1.03e-08	3.77e-09	2.17e-09	1.46e-09	1.15e-09	1.08e-09	1.18e-09
Holmium								
Ho-154	F	9.33e-11	5.32e-11	2.58e-11	1.96e-11	1.29e-11	1.06e-11	1.22e-11
	M	9.36e-11	5.34e-11	2.59e-11	1.97e-11	1.30e-11	1.07e-11	1.23e-11
Ho-155	S	9.37e-11	5.34e-11	2.59e-11	1.97e-11	1.30e-11	1.07e-11	1.23e-11
	F	1.17e-10	6.23e-11	3.14e-11	2.33e-11	1.63e-11	1.40e-11	1.58e-11
Ho-156	M	1.26e-10	6.49e-11	3.31e-11	2.45e-11	1.73e-11	1.51e-11	1.69e-11
	S	1.28e-10	6.55e-11	3.36e-11	2.49e-11	1.75e-11	1.53e-11	1.71e-11
	F	3.02e-10	1.67e-10	8.36e-11	6.33e-11	4.35e-11	3.60e-11	4.10e-11
Ho-157	M	3.07e-10	1.69e-10	8.48e-11	6.42e-11	4.43e-11	3.67e-11	4.17e-11
	S	3.08e-10	1.69e-10	8.51e-11	6.44e-11	4.44e-11	3.68e-11	4.18e-11
	F	2.00e-11	1.05e-11	5.37e-12	3.97e-12	2.92e-12	2.63e-12	2.90e-12
Ho-159	M	2.04e-11	1.06e-11	5.45e-12	4.03e-12	2.97e-12	2.68e-12	2.95e-12
	S	2.05e-11	1.06e-11	5.47e-12	4.05e-12	2.98e-12	2.69e-12	2.97e-12
	F	2.99e-11	1.32e-11	7.22e-12	5.31e-12	4.21e-12	3.76e-12	4.11e-12
Ho-160	M	3.03e-11	1.34e-11	7.33e-12	5.40e-12	4.29e-12	3.84e-12	4.19e-12
	S	3.05e-11	1.34e-11	7.40e-12	5.45e-12	4.33e-12	3.88e-12	4.23e-12
	F	4.94e-11	2.43e-11	1.32e-11	9.81e-12	7.40e-12	6.87e-12	7.48e-12
Ho-161	M	4.99e-11	2.45e-11	1.33e-11	9.89e-12	7.47e-12	6.93e-12	7.55e-12
	S	5.00e-11	2.45e-11	1.33e-11	9.91e-12	7.49e-12	6.95e-12	7.57e-12
	F	3.33e-11	1.31e-11	7.08e-12	4.97e-12	3.85e-12	3.51e-12	3.86e-12
Ho-162	M	3.56e-11	1.36e-11	7.44e-12	5.22e-12	4.08e-12	3.72e-12	4.08e-12
	S	3.61e-11	1.37e-11	7.53e-12	5.28e-12	4.13e-12	3.77e-12	4.14e-12
	F	1.36e-11	5.68e-12	3.19e-12	2.39e-12	2.06e-12	1.72e-12	1.88e-12
Ho-162m	M	1.37e-11	5.71e-12	3.22e-12	2.40e-12	2.07e-12	1.74e-12	1.90e-12
	S	1.37e-11	5.72e-12	3.22e-12	2.41e-12	2.08e-12	1.74e-12	1.90e-12
	F	1.00e-10	4.13e-11	2.30e-11	1.68e-11	1.36e-11	1.20e-11	1.31e-11
	M	1.04e-10	4.22e-11	2.36e-11	1.73e-11	1.40e-11	1.24e-11	1.35e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Ho-163	S	1.05e-10	4.24e-11	2.38e-11	1.74e-11	1.41e-11	1.25e-11	1.36e-11
	F	2.30e-10	1.84e-10	9.12e-11	5.84e-11	5.39e-11	4.85e-11	5.21e-11
	M	1.69e-10	1.42e-10	7.39e-11	4.79e-11	4.24e-11	3.90e-11	4.18e-11
Ho-164	S	2.43e-10	2.36e-10	1.74e-10	1.31e-10	1.26e-10	1.28e-10	1.30e-10
	F	4.63e-11	2.36e-11	1.22e-11	9.15e-12	7.25e-12	5.82e-12	6.51e-12
	M	4.69e-11	2.38e-11	1.23e-11	9.25e-12	7.35e-12	5.90e-12	6.60e-12
Ho-164m	S	4.70e-11	2.39e-11	1.24e-11	9.28e-12	7.37e-12	5.92e-12	6.62e-12
	F	8.53e-11	3.23e-11	1.78e-11	1.30e-11	1.06e-11	8.74e-12	9.72e-12
	M	8.76e-11	3.29e-11	1.82e-11	1.33e-11	1.09e-11	9.00e-12	1.00e-11
Ho-166	S	8.81e-11	3.31e-11	1.83e-11	1.34e-11	1.10e-11	9.06e-12	1.01e-11
	F	2.63e-09	1.28e-09	6.19e-10	4.29e-10	2.99e-10	2.44e-10	2.82e-10
	M	3.59e-09	1.56e-09	8.09e-10	5.67e-10	4.08e-10	3.58e-10	4.03e-10
Ho-166m	S	3.83e-09	1.63e-09	8.57e-10	6.02e-10	4.35e-10	3.86e-10	4.32e-10
	F	2.68e-07	2.27e-07	1.52e-07	1.29e-07	1.44e-07	1.49e-07	1.49e-07
	M	2.01e-07	1.74e-07	1.19e-07	1.00e-07	1.08e-07	1.14e-07	1.14e-07
Ho-167	S	2.91e-07	2.85e-07	2.37e-07	2.01e-07	2.07e-07	2.15e-07	2.15e-07
	F	3.72e-10	1.71e-10	8.93e-11	6.56e-11	5.19e-11	4.32e-11	4.81e-11
	M	3.99e-10	1.78e-10	9.43e-11	6.91e-11	5.52e-11	4.61e-11	5.12e-11
	S	4.05e-10	1.80e-10	9.55e-11	7.00e-11	5.60e-11	4.68e-11	5.19e-11
Erbium								
Er-156	F	1.21e-10	5.97e-11	3.07e-11	2.29e-11	1.62e-11	1.35e-11	1.53e-11
	M	1.23e-10	6.05e-11	3.12e-11	2.34e-11	1.66e-11	1.38e-11	1.56e-11
	S	1.24e-10	6.07e-11	3.13e-11	2.35e-11	1.66e-11	1.39e-11	1.57e-11
Er-159	F	7.34e-11	3.72e-11	1.95e-11	1.45e-11	1.07e-11	9.64e-12	1.06e-11
	M	7.48e-11	3.76e-11	1.99e-11	1.47e-11	1.09e-11	9.85e-12	1.08e-11
	S	7.51e-11	3.78e-11	2.00e-11	1.48e-11	1.10e-11	9.92e-12	1.09e-11
Er-161	F	2.05e-10	1.08e-10	5.51e-11	3.98e-11	2.79e-11	2.65e-11	2.92e-11
	M	2.19e-10	1.12e-10	5.78e-11	4.17e-11	2.95e-11	2.81e-11	3.09e-11
	S	2.22e-10	1.13e-10	5.84e-11	4.22e-11	2.99e-11	2.85e-11	3.13e-11
Er-163	F	5.41e-12	2.49e-12	1.28e-12	9.15e-13	6.26e-13	6.24e-13	6.85e-13
	M	5.54e-12	2.52e-12	1.31e-12	9.31e-13	6.40e-13	6.38e-13	7.00e-13
	S	5.57e-12	2.53e-12	1.31e-12	9.35e-13	6.43e-13	6.41e-13	7.03e-13
Er-165	F	3.36e-11	1.82e-11	8.77e-12	6.19e-12	4.08e-12	4.02e-12	4.46e-12
	M	3.93e-11	1.97e-11	9.82e-12	6.93e-12	4.66e-12	4.62e-12	5.10e-12
	S	4.07e-11	2.01e-11	1.01e-11	7.12e-12	4.81e-12	4.77e-12	5.26e-12

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Er-169	F	1.51e-09	6.66e-10	3.00e-10	1.75e-10	1.51e-10	1.13e-10	1.32e-10
	M	3.61e-09	1.18e-09	6.75e-10	4.43e-10	3.67e-10	3.28e-10	3.61e-10
	S	4.20e-09	1.34e-09	7.86e-10	5.22e-10	4.31e-10	3.92e-10	4.29e-10
Er-171	F	1.06e-09	4.78e-10	2.40e-10	1.73e-10	1.29e-10	1.08e-10	1.22e-10
	M	1.23e-09	5.20e-10	2.69e-10	1.93e-10	1.47e-10	1.25e-10	1.40e-10
	S	1.27e-09	5.31e-10	2.77e-10	1.99e-10	1.51e-10	1.29e-10	1.44e-10
Er-172	F	2.70e-09	1.40e-09	6.67e-10	4.22e-10	3.21e-10	2.71e-10	3.08e-10
	M	5.46e-09	2.18e-09	1.21e-09	8.17e-10	6.31e-10	5.98e-10	6.53e-10
	S	6.20e-09	2.39e-09	1.36e-09	9.24e-10	7.14e-10	6.87e-10	7.47e-10
Thulium								
Tm-161	F	1.15e-10	5.73e-11	2.99e-11	2.21e-11	1.62e-11	1.44e-11	1.60e-11
	M	1.19e-10	5.84e-11	3.06e-11	2.26e-11	1.66e-11	1.48e-11	1.64e-11
	S	1.20e-10	5.86e-11	3.08e-11	2.28e-11	1.67e-11	1.49e-11	1.65e-11
Tm-162	F	1.07e-10	5.96e-11	2.99e-11	2.27e-11	1.55e-11	1.29e-11	1.47e-11
	M	1.07e-10	5.99e-11	3.01e-11	2.28e-11	1.56e-11	1.30e-11	1.48e-11
	S	1.08e-10	6.00e-11	3.01e-11	2.29e-11	1.57e-11	1.30e-11	1.48e-11
Tm-163	F	1.66e-10	7.61e-11	4.07e-11	2.95e-11	2.15e-11	2.04e-11	2.23e-11
	M	1.73e-10	7.81e-11	4.20e-11	3.04e-11	2.23e-11	2.12e-11	2.32e-11
	S	1.75e-10	7.85e-11	4.23e-11	3.06e-11	2.25e-11	2.14e-11	2.34e-11
Tm-165	F	8.16e-10	4.26e-10	2.14e-10	1.50e-10	1.04e-10	9.92e-11	1.10e-10
	M	1.20e-09	5.26e-10	2.81e-10	1.98e-10	1.42e-10	1.38e-10	1.51e-10
	S	1.30e-09	5.52e-10	2.98e-10	2.10e-10	1.52e-10	1.48e-10	1.62e-10
Tm-166	F	7.22e-10	3.71e-10	1.91e-10	1.38e-10	9.61e-11	9.22e-11	1.01e-10
	M	8.24e-10	3.99e-10	2.09e-10	1.50e-10	1.07e-10	1.03e-10	1.13e-10
	S	8.50e-10	4.05e-10	2.14e-10	1.54e-10	1.09e-10	1.06e-10	1.16e-10
Tm-167	F	2.08e-09	1.03e-09	4.61e-10	2.77e-10	2.25e-10	1.80e-10	2.07e-10
	M	4.43e-09	1.66e-09	9.22e-10	6.11e-10	4.87e-10	4.50e-10	4.94e-10
	S	5.10e-09	1.85e-09	1.06e-09	7.11e-10	5.65e-10	5.31e-10	5.79e-10
Tm-168	F	2.42e-08	1.28e-08	5.18e-09	2.92e-09	2.26e-09	2.06e-09	2.35e-09
	M	2.40e-08	1.35e-08	6.99e-09	4.54e-09	3.46e-09	3.62e-09	3.88e-09
	S	2.48e-08	1.49e-08	8.77e-09	6.05e-09	4.58e-09	5.05e-09	5.30e-09
Tm-170	F	2.46e-08	1.64e-08	6.20e-09	2.98e-09	2.77e-09	1.49e-09	1.96e-09
	M	3.36e-08	1.92e-08	9.58e-09	5.87e-09	4.77e-09	4.04e-09	4.53e-09
	S	4.17e-08	2.35e-08	1.37e-08	9.08e-09	7.08e-09	6.84e-09	7.38e-09
Tm-171	F	5.58e-09	3.77e-09	1.46e-09	7.38e-10	6.48e-10	4.67e-10	5.60e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Tm-172	M	5.77e-09	3.55e-09	1.64e-09	9.57e-10	7.83e-10	6.56e-10	7.43e-10
	S	6.68e-09	4.30e-09	2.55e-09	1.66e-09	1.30e-09	1.26e-09	1.36e-09
	F	3.51e-09	1.78e-09	8.55e-10	5.68e-10	4.09e-10	3.41e-10	3.91e-10
	M	5.83e-09	2.44e-09	1.32e-09	9.03e-10	6.72e-10	6.19e-10	6.84e-10
Tm-173	S	6.44e-09	2.62e-09	1.44e-09	9.92e-10	7.41e-10	6.92e-10	7.61e-10
	F	8.08e-10	3.90e-10	1.92e-10	1.38e-10	1.01e-10	8.52e-11	9.62e-11
	M	9.26e-10	4.22e-10	2.14e-10	1.54e-10	1.15e-10	9.80e-11	1.10e-10
	S	9.55e-10	4.30e-10	2.19e-10	1.58e-10	1.18e-10	1.01e-10	1.13e-10
Tm-175	F	8.73e-11	4.98e-11	2.45e-11	1.84e-11	1.34e-11	1.10e-11	1.24e-11
	M	9.14e-11	5.09e-11	2.53e-11	1.89e-11	1.38e-11	1.14e-11	1.29e-11
	S	9.24e-11	5.12e-11	2.55e-11	1.91e-11	1.39e-11	1.16e-11	1.31e-11
Ytterbium								
Yb-162	F	1.00e-10	5.36e-11	2.74e-11	2.08e-11	1.43e-11	1.18e-11	1.34e-11
	M	1.01e-10	5.41e-11	2.77e-11	2.10e-11	1.45e-11	1.20e-11	1.36e-11
	S	1.01e-10	5.42e-11	2.78e-11	2.10e-11	1.45e-11	1.21e-11	1.37e-11
Yb-163	F	4.18e-11	2.19e-11	1.10e-11	8.22e-12	5.72e-12	5.03e-12	5.64e-12
	M	4.26e-11	2.21e-11	1.12e-11	8.34e-12	5.82e-12	5.13e-12	5.74e-12
	S	4.29e-11	2.22e-11	1.12e-11	8.37e-12	5.84e-12	5.15e-12	5.76e-12
Yb-164	F	2.96e-10	1.60e-10	7.91e-11	6.00e-11	4.02e-11	3.20e-11	3.70e-11
	M	3.02e-10	1.62e-10	8.05e-11	6.10e-11	4.11e-11	3.28e-11	3.79e-11
	S	3.03e-10	1.63e-10	8.08e-11	6.13e-11	4.13e-11	3.30e-11	3.81e-11
Yb-166	F	2.13e-09	1.28e-09	6.37e-10	4.38e-10	2.97e-10	2.90e-10	3.20e-10
	M	3.64e-09	1.71e-09	9.30e-10	6.49e-10	4.63e-10	4.67e-10	5.07e-10
	S	4.03e-09	1.83e-09	1.01e-09	7.04e-10	5.06e-10	5.14e-10	5.56e-10
Yb-167	F	3.01e-11	1.14e-11	6.38e-12	4.58e-12	3.93e-12	3.39e-12	3.70e-12
	M	3.34e-11	1.23e-11	7.03e-12	5.06e-12	4.31e-12	3.77e-12	4.11e-12
	S	3.44e-11	1.26e-11	7.22e-12	5.20e-12	4.42e-12	3.88e-12	4.22e-12
Yb-169	F	7.05e-09	3.52e-09	1.45e-09	8.05e-10	6.68e-10	5.33e-10	6.22e-10
	M	1.23e-08	5.18e-09	2.80e-09	1.82e-09	1.44e-09	1.36e-09	1.49e-09
	S	1.42e-08	5.95e-09	3.39e-09	2.28e-09	1.77e-09	1.73e-09	1.87e-09
Yb-175	F	1.25e-09	5.40e-10	2.60e-10	1.65e-10	1.35e-10	1.08e-10	1.23e-10
	M	2.69e-09	8.87e-10	5.06e-10	3.38e-10	2.78e-10	2.49e-10	2.74e-10
	S	3.07e-09	9.80e-10	5.72e-10	3.85e-10	3.16e-10	2.86e-10	3.14e-10
Yb-177	F	3.69e-10	1.86e-10	9.21e-11	6.84e-11	5.07e-11	3.99e-11	4.56e-11
	M	4.08e-10	1.96e-10	9.95e-11	7.38e-11	5.52e-11	4.43e-11	5.02e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Yb-178	S	4.18e-10	1.99e-10	1.02e-10	7.53e-11	5.64e-11	4.54e-11	5.14e-11
	F	4.69e-10	2.39e-10	1.20e-10	9.06e-11	6.68e-11	5.18e-11	5.93e-11
	M	4.83e-10	2.44e-10	1.23e-10	9.31e-11	6.89e-11	5.37e-11	6.13e-11
	S	4.87e-10	2.45e-10	1.24e-10	9.37e-11	6.95e-11	5.41e-11	6.18e-11
Lutetium								
Lu-165	F	6.86e-11	3.30e-11	1.72e-11	1.29e-11	9.76e-12	8.27e-12	9.21e-12
	M	7.13e-11	3.37e-11	1.77e-11	1.32e-11	1.01e-11	8.56e-12	9.52e-12
	S	7.20e-11	3.39e-11	1.78e-11	1.33e-11	1.01e-11	8.63e-12	9.59e-12
Lu-167	F	1.64e-10	7.37e-11	3.96e-11	2.88e-11	2.18e-11	1.97e-11	2.17e-11
	M	1.77e-10	7.72e-11	4.21e-11	3.07e-11	2.33e-11	2.12e-11	2.33e-11
	S	1.81e-10	7.82e-11	4.28e-11	3.12e-11	2.38e-11	2.16e-11	2.37e-11
Lu-169	F	1.33e-09	8.03e-10	3.85e-10	2.63e-10	1.78e-10	1.71e-10	1.90e-10
	M	1.86e-09	9.77e-10	5.10e-10	3.56e-10	2.48e-10	2.49e-10	2.72e-10
	S	2.02e-09	1.04e-09	5.53e-10	3.89e-10	2.72e-10	2.75e-10	2.99e-10
Lu-170	F	2.08e-09	1.32e-09	6.67e-10	4.71e-10	3.12e-10	3.12e-10	3.43e-10
	M	2.87e-09	1.58e-09	8.34e-10	5.93e-10	4.05e-10	4.18e-10	4.53e-10
	S	3.07e-09	1.65e-09	8.78e-10	6.25e-10	4.30e-10	4.45e-10	4.82e-10
Lu-171	F	2.52e-09	1.27e-09	6.12e-10	3.92e-10	2.94e-10	2.70e-10	3.01e-10
	M	4.95e-09	1.96e-09	1.10e-09	7.43e-10	5.69e-10	5.59e-10	6.06e-10
	S	5.63e-09	2.16e-09	1.24e-09	8.47e-10	6.49e-10	6.44e-10	6.96e-10
Lu-172	F	4.25e-09	2.40e-09	1.19e-09	7.90e-10	5.65e-10	5.42e-10	5.99e-10
	M	7.44e-09	3.41e-09	1.88e-09	1.30e-09	9.59e-10	9.75e-10	1.05e-09
	S	8.33e-09	3.70e-09	2.08e-09	1.45e-09	1.07e-09	1.10e-09	1.18e-09
Lu-173	F	1.98e-08	1.29e-08	5.19e-09	2.82e-09	2.32e-09	2.02e-09	2.30e-09
	M	1.73e-08	1.15e-08	5.46e-09	3.31e-09	2.62e-09	2.50e-09	2.74e-09
	S	1.80e-08	1.29e-08	7.80e-09	5.26e-09	4.16e-09	4.39e-09	4.62e-09
Lu-174	F	2.08e-08	1.49e-08	6.37e-09	3.56e-09	3.06e-09	2.77e-09	3.07e-09
	M	1.91e-08	1.30e-08	6.32e-09	3.85e-09	3.17e-09	3.03e-09	3.29e-09
	S	2.15e-08	1.57e-08	9.90e-09	6.75e-09	5.72e-09	5.95e-09	6.20e-09
Lu-174m	F	1.53e-08	8.84e-09	3.41e-09	1.73e-09	1.54e-09	1.13e-09	1.35e-09
	M	2.02e-08	1.01e-08	5.03e-09	3.08e-09	2.50e-09	2.22e-09	2.47e-09
	S	2.38e-08	1.23e-08	7.18e-09	4.76e-09	3.73e-09	3.63e-09	3.91e-09
Lu-176	F	1.94e-07	1.65e-07	9.70e-08	7.60e-08	7.89e-08	7.72e-08	7.88e-08
	M	1.61e-07	1.32e-07	8.02e-08	6.24e-08	6.23e-08	6.19e-08	6.33e-08
	S	2.61e-07	2.42e-07	1.92e-07	1.56e-07	1.56e-07	1.61e-07	1.62e-07

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Lu-176m	F	6.28e-10	2.93e-10	1.47e-10	1.08e-10	8.16e-11	6.46e-11	7.35e-11
	M	6.74e-10	3.06e-10	1.55e-10	1.15e-10	8.71e-11	6.97e-11	7.90e-11
	S	6.85e-10	3.09e-10	1.58e-10	1.16e-10	8.85e-11	7.10e-11	8.04e-11
Lu-177	F	1.76e-09	7.92e-10	3.65e-10	2.22e-10	1.85e-10	1.44e-10	1.66e-10
	M	3.99e-09	1.34e-09	7.63e-10	5.05e-10	4.14e-10	3.72e-10	4.09e-10
	S	4.61e-09	1.50e-09	8.75e-10	5.86e-10	4.78e-10	4.37e-10	4.79e-10
Lu-177m	F	5.33e-08	3.08e-08	1.20e-08	6.32e-09	5.17e-09	4.04e-09	4.79e-09
	M	5.94e-08	3.28e-08	1.64e-08	1.03e-08	8.07e-09	7.63e-09	8.37e-09
	S	6.65e-08	3.83e-08	2.25e-08	1.52e-08	1.17e-08	1.21e-08	1.29e-08
Lu-178	F	1.62e-10	9.09e-11	4.50e-11	3.43e-11	2.41e-11	1.86e-11	2.15e-11
	M	1.64e-10	9.16e-11	4.54e-11	3.46e-11	2.43e-11	1.88e-11	2.17e-11
	S	1.64e-10	9.17e-11	4.55e-11	3.46e-11	2.44e-11	1.89e-11	2.18e-11
Lu-178m	F	1.44e-10	7.68e-11	3.95e-11	2.97e-11	2.33e-11	1.92e-11	2.14e-11
	M	1.45e-10	7.73e-11	3.99e-11	3.00e-11	2.36e-11	1.94e-11	2.16e-11
	S	1.46e-10	7.75e-11	4.00e-11	3.01e-11	2.36e-11	1.95e-11	2.17e-11
Lu-179	F	6.60e-10	3.30e-10	1.59e-10	1.18e-10	8.38e-11	6.58e-11	7.59e-11
	M	7.07e-10	3.45e-10	1.69e-10	1.25e-10	8.99e-11	7.17e-11	8.22e-11
	S	7.19e-10	3.48e-10	1.72e-10	1.27e-10	9.14e-11	7.32e-11	8.38e-11
Hafnium								
Hf-170	F	7.17e-10	4.74e-10	2.27e-10	1.54e-10	1.01e-10	9.72e-11	1.09e-10
	M	1.43e-09	6.72e-10	3.64e-10	2.56e-10	1.82e-10	1.84e-10	2.00e-10
	S	1.59e-09	7.19e-10	3.94e-10	2.78e-10	2.00e-10	2.02e-10	2.19e-10
Hf-172	F	1.45e-07	1.15e-07	6.08e-08	3.81e-08	3.38e-08	3.29e-08	3.49e-08
	M	8.51e-08	6.42e-08	3.76e-08	2.43e-08	2.17e-08	2.23e-08	2.33e-08
	S	1.15e-07	9.02e-08	5.76e-08	3.93e-08	3.29e-08	3.60e-08	3.72e-08
Hf-173	F	3.98e-10	2.49e-10	1.11e-10	7.65e-11	5.03e-11	4.74e-11	5.34e-11
	M	8.47e-10	3.48e-10	1.89e-10	1.32e-10	9.95e-11	9.48e-11	1.04e-10
	S	9.41e-10	3.73e-10	2.08e-10	1.46e-10	1.11e-10	1.07e-10	1.16e-10
Hf-174	F	2.27e-05	1.98e-05	1.18e-05	9.33e-06	8.52e-06	8.24e-06	8.54e-06
	M	1.26e-05	9.96e-06	6.36e-06	4.77e-06	4.54e-06	4.51e-06	4.64e-06
	S	2.43e-05	2.17e-05	1.60e-05	1.21e-05	1.16e-05	1.18e-05	1.20e-05
Hf-175	F	6.43e-09	4.41e-09	2.06e-09	1.16e-09	9.54e-10	8.27e-10	9.29e-10
	M	5.92e-09	3.65e-09	2.01e-09	1.31e-09	1.02e-09	1.04e-09	1.11e-09
	S	7.26e-09	4.42e-09	2.53e-09	1.74e-09	1.30e-09	1.40e-09	1.48e-09
Hf-177m	F	2.69e-10	1.46e-10	7.33e-11	5.43e-11	4.09e-11	3.51e-11	3.90e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Hf-178m	M	4.10e-10	2.02e-10	1.09e-10	8.11e-11	6.66e-11	5.63e-11	6.18e-11
	S	4.16e-10	2.04e-10	1.10e-10	8.21e-11	6.76e-11	5.71e-11	6.27e-11
	F	3.75e-07	3.59e-07	2.86e-07	2.68e-07	2.75e-07	2.87e-07	2.86e-07
	M	1.83e-07	1.69e-07	1.39e-07	1.24e-07	1.35e-07	1.45e-07	1.43e-07
Hf-179m	S	3.15e-07	3.01e-07	2.42e-07	2.01e-07	2.07e-07	2.20e-07	2.20e-07
	F	9.71e-09	6.11e-09	2.70e-09	1.51e-09	1.19e-09	1.01e-09	1.16e-09
	M	1.47e-08	6.66e-09	3.71e-09	2.45e-09	1.91e-09	1.89e-09	2.04e-09
	S	1.75e-08	7.68e-09	4.39e-09	2.98e-09	2.29e-09	2.32e-09	2.49e-09
Hf-180m	F	3.01e-10	1.71e-10	8.07e-11	5.86e-11	3.95e-11	3.61e-11	4.05e-11
	M	6.64e-10	2.74e-10	1.49e-10	1.07e-10	8.39e-11	7.60e-11	8.32e-11
	S	7.04e-10	2.84e-10	1.56e-10	1.12e-10	8.81e-11	7.98e-11	8.73e-11
	F	1.30e-08	8.47e-09	3.54e-09	1.81e-09	1.50e-09	1.11e-09	1.33e-09
Hf-181	M	1.75e-08	8.23e-09	4.51e-09	2.91e-09	2.31e-09	2.20e-09	2.39e-09
	S	2.14e-08	9.74e-09	5.57e-09	3.74e-09	2.90e-09	2.88e-09	3.10e-09
	F	3.29e-07	3.33e-07	2.95e-07	2.93e-07	2.99e-07	3.04e-07	3.03e-07
	M	1.46e-07	1.47e-07	1.36e-07	1.29e-07	1.43e-07	1.49e-07	1.47e-07
Hf-182	S	3.10e-07	3.15e-07	2.66e-07	2.25e-07	2.32e-07	2.39e-07	2.39e-07
	F	1.46e-10	7.60e-11	3.81e-11	2.80e-11	2.11e-11	1.80e-11	2.01e-11
	M	2.45e-10	1.11e-10	6.09e-11	4.51e-11	3.74e-11	3.17e-11	3.48e-11
	S	2.52e-10	1.14e-10	6.30e-11	4.66e-11	3.87e-11	3.29e-11	3.60e-11
Hf-182m	F	1.98e-10	1.13e-10	5.22e-11	3.85e-11	2.55e-11	2.04e-11	2.38e-11
	M	3.18e-10	1.56e-10	7.99e-11	5.90e-11	4.35e-11	3.60e-11	4.06e-11
	S	3.35e-10	1.62e-10	8.32e-11	6.13e-11	4.54e-11	3.78e-11	4.25e-11
	F	7.99e-10	4.53e-10	2.02e-10	1.43e-10	9.17e-11	7.74e-11	9.01e-11
Hf-183	M	1.74e-09	7.17e-10	3.77e-10	2.69e-10	2.04e-10	1.78e-10	1.98e-10
	S	1.87e-09	7.50e-10	3.99e-10	2.84e-10	2.17e-10	1.90e-10	2.11e-10
	F	1.51e-10	8.52e-11	4.16e-11	3.13e-11	2.14e-11	1.77e-11	2.02e-11
	M	1.90e-10	1.03e-10	5.26e-11	3.97e-11	2.85e-11	2.37e-11	2.67e-11
Hf-184	S	1.93e-10	1.04e-10	5.38e-11	4.06e-11	2.92e-11	2.44e-11	2.74e-11
	F	2.06e-10	1.15e-10	5.37e-11	3.89e-11	2.58e-11	2.26e-11	2.57e-11
	M	4.26e-10	1.75e-10	9.43e-11	6.80e-11	5.18e-11	4.62e-11	5.10e-11
	S	4.53e-10	1.82e-10	9.94e-11	7.16e-11	5.49e-11	4.92e-11	5.42e-11
Tantalum	F	1.86e-10	1.02e-10	4.91e-11	3.71e-11	2.50e-11	2.00e-11	2.31e-11
	M	2.72e-10	1.37e-10	7.06e-11	5.33e-11	3.92e-11	3.20e-11	3.61e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Ta-175	S	2.76e-10	1.38e-10	7.15e-11	5.39e-11	3.98e-11	3.25e-11	3.66e-11
	F	3.89e-10	2.46e-10	1.16e-10	8.36e-11	5.38e-11	5.10e-11	5.71e-11
	M	6.54e-10	3.32e-10	1.73e-10	1.23e-10	8.66e-11	8.44e-11	9.24e-11
Ta-176	S	7.01e-10	3.49e-10	1.83e-10	1.31e-10	9.24e-11	9.08e-11	9.92e-11
	F	5.03e-10	3.11e-10	1.49e-10	1.10e-10	7.01e-11	6.70e-11	7.48e-11
	M	8.47e-10	4.30e-10	2.24e-10	1.61e-10	1.13e-10	1.10e-10	1.20e-10
Ta-177	S	8.91e-10	4.43e-10	2.32e-10	1.67e-10	1.18e-10	1.15e-10	1.26e-10
	F	1.44e-10	8.86e-11	4.09e-11	2.81e-11	1.80e-11	1.69e-11	1.91e-11
	M	4.95e-10	1.77e-10	9.98e-11	6.89e-11	5.36e-11	5.02e-11	5.49e-11
Ta-178m	S	5.74e-10	1.98e-10	1.13e-10	7.79e-11	6.13e-11	5.74e-11	6.27e-11
	F	1.82e-10	1.00e-10	4.88e-11	3.60e-11	2.53e-11	2.28e-11	2.54e-11
	M	3.34e-10	1.51e-10	8.16e-11	5.99e-11	4.78e-11	4.24e-11	4.64e-11
Ta-179	S	3.45e-10	1.54e-10	8.37e-11	6.14e-11	4.91e-11	4.36e-11	4.77e-11
	F	7.15e-10	5.78e-10	3.25e-10	2.20e-10	1.93e-10	1.84e-10	1.95e-10
	M	1.16e-09	8.43e-10	4.83e-10	3.23e-10	2.55e-10	2.59e-10	2.75e-10
Ta-180	S	2.71e-09	2.20e-09	1.35e-09	9.04e-10	7.17e-10	7.55e-10	7.93e-10
	F	7.89e-11	4.37e-11	1.99e-11	1.40e-11	9.50e-12	8.11e-12	9.30e-12
	M	2.25e-10	8.24e-11	4.56e-11	3.24e-11	2.66e-11	2.30e-11	2.53e-11
Ta-182	S	2.45e-10	8.72e-11	4.87e-11	3.46e-11	2.85e-11	2.47e-11	2.72e-11
	F	1.27e-08	9.11e-09	4.69e-09	2.89e-09	2.23e-09	1.97e-09	2.19e-09
	M	2.89e-08	1.58e-08	9.12e-09	6.10e-09	4.73e-09	4.82e-09	5.15e-09
Ta-182m	S	4.34e-08	2.49e-08	1.47e-08	9.98e-09	7.64e-09	8.03e-09	8.51e-09
	F	6.37e-11	3.44e-11	1.78e-11	1.32e-11	1.09e-11	9.06e-12	9.98e-12
	M	8.25e-11	4.28e-11	2.29e-11	1.71e-11	1.46e-11	1.21e-11	1.33e-11
Ta-183	S	8.43e-11	4.39e-11	2.35e-11	1.75e-11	1.50e-11	1.25e-11	1.37e-11
	F	2.08e-09	1.20e-09	5.39e-10	3.40e-10	2.26e-10	1.92e-10	2.24e-10
	M	8.54e-09	2.84e-09	1.64e-09	1.10e-09	8.87e-10	8.14e-10	8.92e-10
Ta-184	S	1.02e-08	3.30e-09	1.93e-09	1.30e-09	1.05e-09	9.68e-10	1.06e-09
	F	1.05e-09	6.13e-10	2.76e-10	2.00e-10	1.26e-10	1.08e-10	1.25e-10
	M	2.06e-09	9.29e-10	4.78e-10	3.44e-10	2.53e-10	2.24e-10	2.50e-10
Ta-185	S	2.19e-09	9.67e-10	5.03e-10	3.61e-10	2.67e-10	2.37e-10	2.64e-10
	F	2.15e-10	1.18e-10	5.62e-11	4.23e-11	2.89e-11	2.22e-11	2.59e-11
	M	3.08e-10	1.57e-10	8.00e-11	6.04e-11	4.49e-11	3.53e-11	4.02e-11
Ta-186	S	3.13e-10	1.59e-10	8.14e-11	6.14e-11	4.58e-11	3.61e-11	4.10e-11
	F	8.51e-11	4.86e-11	2.32e-11	1.76e-11	1.21e-11	9.84e-12	1.13e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Tungsten	M	9.55e-11	5.44e-11	2.66e-11	2.01e-11	1.41e-11	1.15e-11	1.31e-11
	S	9.57e-11	5.46e-11	2.67e-11	2.02e-11	1.42e-11	1.16e-11	1.32e-11
W-177	F	1.03e-10	5.58e-11	2.82e-11	2.06e-11	1.42e-11	1.27e-11	1.42e-11
	M	2.11e-10	8.87e-11	4.84e-11	3.49e-11	2.68e-11	2.46e-11	2.69e-11
	S	2.20e-10	9.15e-11	5.01e-11	3.61e-11	2.78e-11	2.56e-11	2.80e-11
W-178	F	2.89e-10	1.68e-10	7.66e-11	4.99e-11	3.16e-11	2.62e-11	3.10e-11
	M	2.62e-09	1.11e-09	6.25e-10	4.20e-10	3.22e-10	3.14e-10	3.41e-10
	S	3.38e-09	1.45e-09	8.23e-10	5.53e-10	4.24e-10	4.16e-10	4.51e-10
W-179	F	4.20e-12	1.95e-12	9.52e-13	6.66e-13	4.53e-13	4.30e-13	4.80e-13
	M	5.21e-12	2.30e-12	1.19e-12	8.33e-13	5.94e-13	5.77e-13	6.34e-13
	S	5.30e-12	2.37e-12	1.23e-12	8.60e-13	6.17e-13	6.02e-13	6.60e-13
W-181	F	1.55e-10	8.75e-11	4.34e-11	2.90e-11	1.84e-11	1.56e-11	1.82e-11
	M	1.07e-09	6.86e-10	3.75e-10	2.50e-10	1.80e-10	1.83e-10	1.98e-10
	S	1.84e-09	1.27e-09	7.10e-10	4.75e-10	3.46e-10	3.56e-10	3.82e-10
W-185	F	1.10e-09	5.59e-10	2.18e-10	1.17e-10	7.98e-11	4.67e-11	6.41e-11
	M	9.32e-09	4.04e-09	2.28e-09	1.49e-09	1.17e-09	1.09e-09	1.19e-09
	S	1.38e-08	6.48e-09	3.69e-09	2.44e-09	1.90e-09	1.79e-09	1.95e-09
W-187	F	6.48e-10	3.90e-10	1.69e-10	1.19e-10	7.41e-11	5.77e-11	6.93e-11
	M	2.01e-09	8.38e-10	4.43e-10	3.11e-10	2.32e-10	2.08e-10	2.31e-10
	S	2.26e-09	9.15e-10	4.91e-10	3.44e-10	2.59e-10	2.34e-10	2.59e-10
W-188	F	7.93e-09	4.14e-09	1.69e-09	8.98e-10	6.34e-10	3.44e-10	4.79e-10
	M	4.96e-08	2.49e-08	1.43e-08	9.52e-09	7.44e-09	7.23e-09	7.80e-09
	S	7.61e-08	4.04e-08	2.36e-08	1.59e-08	1.25e-08	1.23e-08	1.32e-08
W-190	F	2.90e-10	1.61e-10	7.85e-11	5.83e-11	4.20e-11	3.34e-11	3.82e-11
	M	3.73e-10	1.99e-10	1.02e-10	7.74e-11	5.94e-11	4.78e-11	5.37e-11
	S	3.75e-10	2.00e-10	1.03e-10	7.80e-11	5.99e-11	4.82e-11	5.41e-11
Rhenium								
Re-178	F	6.91e-11	3.93e-11	1.93e-11	1.43e-11	9.98e-12	8.20e-12	9.35e-12
	M	7.72e-11	4.29e-11	2.15e-11	1.63e-11	1.16e-11	9.69e-12	1.09e-11
	S	7.77e-11	4.31e-11	2.16e-11	1.64e-11	1.17e-11	9.77e-12	1.10e-11
Re-179	F	3.63e-11	1.95e-11	9.89e-12	7.14e-12	5.28e-12	4.64e-12	5.16e-12
	M	4.32e-11	2.21e-11	1.17e-11	8.74e-12	6.82e-12	6.00e-12	6.58e-12
	S	4.34e-11	2.22e-11	1.18e-11	8.80e-12	6.88e-12	6.05e-12	6.63e-12
Re-181	F	1.12e-09	5.75e-10	2.56e-10	1.67e-10	1.06e-10	9.28e-11	1.09e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Re-182	M	1.29e-09	5.97e-10	3.06e-10	2.14e-10	1.52e-10	1.42e-10	1.58e-10
	S	1.30e-09	6.01e-10	3.15e-10	2.23e-10	1.59e-10	1.51e-10	1.66e-10
	F	3.74e-09	1.79e-09	8.09e-10	5.31e-10	3.38e-10	3.10e-10	3.58e-10
Re-182m	M	6.14e-09	2.46e-09	1.35e-09	9.33e-10	6.96e-10	6.71e-10	7.33e-10
	S	6.63e-09	2.61e-09	1.47e-09	1.02e-09	7.72e-10	7.50e-10	8.15e-10
	F	7.22e-10	4.04e-10	1.88e-10	1.27e-10	8.21e-11	7.46e-11	8.53e-11
Re-183	M	1.02e-09	4.68e-10	2.46e-10	1.75e-10	1.26e-10	1.19e-10	1.31e-10
	S	1.06e-09	4.76e-10	2.54e-10	1.81e-10	1.32e-10	1.26e-10	1.38e-10
	F	2.56e-09	8.36e-10	3.48e-10	2.07e-10	1.30e-10	1.13e-10	1.38e-10
Re-184	M	1.02e-08	4.37e-09	2.46e-09	1.63e-09	1.26e-09	1.21e-09	1.32e-09
	S	1.43e-08	6.75e-09	3.84e-09	2.56e-09	1.97e-09	1.91e-09	2.07e-09
	F	2.43e-09	1.14e-09	5.40e-10	3.64e-10	2.30e-10	2.18e-10	2.48e-10
Re-184m	M	7.39e-09	3.93e-09	2.23e-09	1.53e-09	1.13e-09	1.22e-09	1.30e-09
	S	9.69e-09	5.37e-09	3.09e-09	2.13e-09	1.59e-09	1.73e-09	1.83e-09
	F	3.84e-09	1.31e-09	5.70e-10	3.50e-10	2.23e-10	1.99e-10	2.37e-10
Re-186	M	2.43e-08	1.25e-08	7.26e-09	4.90e-09	3.76e-09	3.88e-09	4.14e-09
	S	4.38e-08	2.67e-08	1.60e-08	1.09e-08	8.41e-09	8.87e-09	9.37e-09
	F	3.45e-09	1.36e-09	5.89e-10	3.56e-10	2.19e-10	1.73e-10	2.15e-10
Re-186m	M	4.50e-09	1.73e-09	9.26e-10	6.21e-10	4.68e-10	4.23e-10	4.71e-10
	S	4.72e-09	1.83e-09	1.01e-09	6.84e-10	5.26e-10	4.82e-10	5.31e-10
	F	4.98e-09	1.44e-09	6.10e-10	3.57e-10	2.41e-10	2.11e-10	2.54e-10
Re-187	M	5.17e-08	2.84e-08	1.66e-08	1.10e-08	8.52e-09	8.24e-09	8.90e-09
	S	3.01e-07	2.77e-07	2.18e-07	1.75e-07	1.75e-07	1.80e-07	1.81e-07
	F	1.25e-11	3.42e-12	1.34e-12	7.09e-13	4.42e-13	3.56e-13	4.63e-13
Re-188	M	3.39e-11	2.40e-11	1.27e-11	7.67e-12	5.31e-12	4.91e-12	5.52e-12
	S	2.32e-10	2.26e-10	1.66e-10	1.26e-10	1.22e-10	1.24e-10	1.26e-10
	F	2.85e-09	1.39e-09	6.34e-10	4.11e-10	2.54e-10	1.92e-10	2.36e-10
Re-188m	M	2.87e-09	1.33e-09	6.65e-10	4.69e-10	3.23e-10	2.75e-10	3.14e-10
	S	2.83e-09	1.31e-09	6.64e-10	4.74e-10	3.31e-10	2.87e-10	3.25e-10
	F	7.32e-11	3.28e-11	1.58e-11	1.04e-11	7.23e-12	5.69e-12	6.71e-12
Re-189	M	8.00e-11	3.29e-11	1.74e-11	1.23e-11	9.42e-12	8.01e-12	8.97e-12
	S	7.93e-11	3.25e-11	1.74e-11	1.25e-11	9.60e-12	8.25e-12	9.19e-12
	F	1.98e-09	8.54e-10	3.66e-10	2.23e-10	1.40e-10	1.09e-10	1.35e-10
	M	2.08e-09	8.15e-10	4.22e-10	2.89e-10	2.17e-10	1.88e-10	2.11e-10
	S	2.06e-09	8.02e-10	4.29e-10	2.99e-10	2.28e-10	2.00e-10	2.23e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Re-190m	F	9.72e-10	5.20e-10	2.41e-10	1.64e-10	1.06e-10	8.25e-11	9.85e-11
	M	1.08e-09	5.31e-10	2.67e-10	1.96e-10	1.41e-10	1.18e-10	1.33e-10
	S	1.08e-09	5.26e-10	2.66e-10	1.97e-10	1.43e-10	1.20e-10	1.35e-10
Osmium								
Os-180	F	4.93e-11	2.64e-11	1.34e-11	9.97e-12	7.31e-12	6.29e-12	7.02e-12
	M	6.23e-11	3.19e-11	1.69e-11	1.27e-11	9.79e-12	8.44e-12	9.31e-12
	S	6.27e-11	3.21e-11	1.70e-11	1.28e-11	9.86e-12	8.50e-12	9.38e-12
Os-181	F	1.90e-10	1.01e-10	4.85e-11	3.42e-11	2.25e-11	2.05e-11	2.32e-11
	M	2.93e-10	1.33e-10	7.05e-11	5.06e-11	3.70e-11	3.46e-11	3.80e-11
	S	3.00e-10	1.35e-10	7.24e-11	5.21e-11	3.84e-11	3.60e-11	3.95e-11
Os-182	F	8.62e-10	5.66e-10	2.68e-10	1.86e-10	1.15e-10	1.09e-10	1.23e-10
	M	1.87e-09	8.51e-10	4.54e-10	3.19e-10	2.26e-10	2.21e-10	2.42e-10
	S	2.08e-09	9.08e-10	4.92e-10	3.46e-10	2.48e-10	2.43e-10	2.66e-10
Os-183	F	3.00e-10	1.87e-10	8.92e-11	6.40e-11	4.10e-11	3.91e-11	4.38e-11
	M	8.72e-10	3.53e-10	1.92e-10	1.35e-10	1.02e-10	9.58e-11	1.05e-10
	S	9.84e-10	3.91e-10	2.16e-10	1.51e-10	1.15e-10	1.08e-10	1.18e-10
Os-183m	F	3.06e-10	2.01e-10	9.65e-11	6.99e-11	4.37e-11	4.19e-11	4.69e-11
	M	5.82e-10	3.04e-10	1.57e-10	1.12e-10	7.78e-11	7.55e-11	8.29e-11
	S	6.41e-10	3.29e-10	1.72e-10	1.22e-10	8.56e-11	8.33e-11	9.13e-11
Os-185	F	2.13e-09	1.53e-09	8.36e-10	5.62e-10	3.87e-10	3.95e-10	4.29e-10
	M	5.82e-09	3.94e-09	2.29e-09	1.59e-09	1.17e-09	1.33e-09	1.39e-09
	S	9.07e-09	6.35e-09	3.76e-09	2.62e-09	1.96e-09	2.25e-09	2.34e-09
Os-186	F	1.46e-06	1.05e-06	5.88e-07	3.56e-07	2.43e-07	2.25e-07	2.53e-07
	M	6.91e-06	3.59e-06	2.10e-06	1.32e-06	9.95e-07	9.37e-07	1.03e-06
	S	2.81e-05	2.39e-05	1.73e-05	1.29e-05	1.23e-05	1.25e-05	1.28e-05
Os-189m	F	8.31e-12	4.17e-12	1.89e-12	1.16e-12	7.71e-13	6.52e-13	7.68e-13
	M	1.79e-11	6.90e-12	3.59e-12	2.29e-12	1.71e-12	1.57e-12	1.76e-12
	S	1.92e-11	7.31e-12	3.83e-12	2.44e-12	1.83e-12	1.69e-12	1.89e-12
Os-191	F	9.70e-10	5.48e-10	2.61e-10	1.61e-10	1.08e-10	9.54e-11	1.10e-10
	M	7.56e-09	2.38e-09	1.40e-09	9.30e-10	7.58e-10	6.99e-10	7.65e-10
	S	9.46e-09	2.99e-09	1.76e-09	1.17e-09	9.54e-10	8.82e-10	9.64e-10
Os-191m	F	1.06e-10	4.92e-11	2.46e-11	1.59e-11	1.21e-11	1.03e-11	1.17e-11
	M	9.10e-10	2.37e-10	1.48e-10	9.98e-11	8.69e-11	7.73e-11	8.44e-11
	S	1.07e-09	2.78e-10	1.73e-10	1.17e-10	1.02e-10	9.09e-11	9.92e-11
Os-193	F	9.01e-10	5.11e-10	2.24e-10	1.55e-10	9.51e-11	7.63e-11	9.13e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Os-194	M	2.51e-09	9.83e-10	5.25e-10	3.65e-10	2.75e-10	2.43e-10	2.71e-10
	S	2.84e-09	1.08e-09	5.83e-10	4.04e-10	3.08e-10	2.74e-10	3.05e-10
	F	1.86e-08	1.49e-08	8.26e-09	5.24e-09	4.16e-09	3.81e-09	4.15e-09
	M	8.90e-08	5.51e-08	3.31e-08	2.22e-08	1.77e-08	1.77e-08	1.88e-08
Os-196	S	3.26e-07	2.73e-07	1.92e-07	1.41e-07	1.34e-07	1.41e-07	1.43e-07
	F	3.02e-10	1.76e-10	8.24e-11	6.25e-11	4.09e-11	3.07e-11	3.63e-11
	M	3.85e-10	2.17e-10	1.07e-10	8.16e-11	5.64e-11	4.36e-11	5.05e-11
	S	3.88e-10	2.19e-10	1.08e-10	8.22e-11	5.69e-11	4.40e-11	5.09e-11
Iridium								
Ir-182	F	1.13e-10	6.58e-11	3.15e-11	2.37e-11	1.59e-11	1.29e-11	1.49e-11
	M	1.41e-10	7.76e-11	3.87e-11	2.91e-11	2.01e-11	1.68e-11	1.91e-11
	S	1.44e-10	7.85e-11	3.93e-11	2.95e-11	2.05e-11	1.71e-11	1.94e-11
Ir-183	F	1.06e-10	6.12e-11	3.00e-11	2.22e-11	1.49e-11	1.33e-11	1.50e-11
	M	1.74e-10	8.59e-11	4.52e-11	3.32e-11	2.44e-11	2.20e-11	2.43e-11
	S	1.82e-10	8.91e-11	4.71e-11	3.45e-11	2.55e-11	2.31e-11	2.55e-11
Ir-184	F	3.58e-10	2.10e-10	9.93e-11	7.33e-11	4.75e-11	4.10e-11	4.69e-11
	M	5.77e-10	2.94e-10	1.50e-10	1.11e-10	7.98e-11	7.05e-11	7.85e-11
	S	5.94e-10	3.00e-10	1.54e-10	1.13e-10	8.19e-11	7.26e-11	8.07e-11
Ir-185	F	4.26e-10	2.69e-10	1.29e-10	9.15e-11	5.90e-11	5.57e-11	6.25e-11
	M	1.10e-09	4.57e-10	2.49e-10	1.76e-10	1.31e-10	1.24e-10	1.36e-10
	S	1.23e-09	4.99e-10	2.76e-10	1.94e-10	1.46e-10	1.40e-10	1.53e-10
Ir-186	F	8.15e-10	5.38e-10	2.55e-10	1.84e-10	1.15e-10	1.09e-10	1.23e-10
	M	1.49e-09	7.69e-10	3.96e-10	2.85e-10	1.98e-10	1.91e-10	2.10e-10
	S	1.60e-09	8.03e-10	4.17e-10	2.99e-10	2.10e-10	2.03e-10	2.23e-10
Ir-186m	F	1.37e-10	8.19e-11	3.96e-11	2.91e-11	1.89e-11	1.71e-11	1.93e-11
	M	2.13e-10	1.11e-10	5.73e-11	4.21e-11	3.00e-11	2.75e-11	3.04e-11
	S	2.20e-10	1.13e-10	5.87e-11	4.31e-11	3.08e-11	2.83e-11	3.12e-11
Ir-187	F	1.46e-10	8.78e-11	4.16e-11	2.96e-11	1.92e-11	1.79e-11	2.01e-11
	M	4.02e-10	1.54e-10	8.41e-11	5.93e-11	4.49e-11	4.17e-11	4.58e-11
	S	4.40e-10	1.63e-10	9.00e-11	6.33e-11	4.84e-11	4.50e-11	4.94e-11
Ir-188	F	1.29e-09	9.09e-10	4.50e-10	3.21e-10	2.03e-10	2.01e-10	2.23e-10
	M	1.96e-09	1.18e-09	6.11e-10	4.38e-10	2.93e-10	3.01e-10	3.27e-10
	S	2.11e-09	1.23e-09	6.45e-10	4.62e-10	3.11e-10	3.21e-10	3.48e-10
Ir-189	F	6.73e-10	4.00e-10	1.88e-10	1.16e-10	7.93e-11	7.01e-11	8.05e-11
	M	2.48e-09	8.63e-10	4.97e-10	3.31e-10	2.62e-10	2.46e-10	2.69e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Ir-190	S	3.02e-09	1.04e-09	6.01e-10	4.02e-10	3.19e-10	3.01e-10	3.28e-10
	F	3.48e-09	2.39e-09	1.23e-09	8.31e-10	5.62e-10	5.61e-10	6.16e-10
	M	5.54e-09	3.19e-09	1.75e-09	1.22e-09	8.75e-10	9.36e-10	9.99e-10
Ir-190m	S	6.40e-09	3.60e-09	1.99e-09	1.39e-09	1.00e-09	1.08e-09	1.15e-09
	F	1.53e-11	1.02e-11	5.21e-12	3.48e-12	2.36e-12	2.34e-12	2.58e-12
	M	2.38e-11	1.35e-11	7.36e-12	5.08e-12	3.64e-12	3.88e-12	4.15e-12
Ir-190n	S	2.72e-11	1.51e-11	8.31e-12	5.77e-12	4.15e-12	4.46e-12	4.76e-12
	F	2.03e-10	1.22e-10	5.84e-11	4.23e-11	2.77e-11	2.57e-11	2.88e-11
	M	3.46e-10	1.73e-10	9.02e-11	6.55e-11	4.78e-11	4.46e-11	4.90e-11
Ir-192	S	3.59e-10	1.77e-10	9.27e-11	6.72e-11	4.93e-11	4.61e-11	5.05e-11
	F	1.11e-08	7.50e-09	3.82e-09	2.37e-09	1.68e-09	1.54e-09	1.73e-09
	M	2.05e-08	1.12e-08	6.35e-09	4.23e-09	3.23e-09	3.27e-09	3.51e-09
Ir-192n	S	2.87e-08	1.59e-08	9.15e-09	6.20e-09	4.72e-09	4.88e-09	5.20e-09
	F	3.74e-08	3.02e-08	1.75e-08	1.20e-08	1.07e-08	1.11e-08	1.15e-08
	M	4.76e-08	3.30e-08	2.01e-08	1.35e-08	1.16e-08	1.19e-08	1.24e-08
Ir-193m	S	2.87e-07	2.77e-07	2.22e-07	1.81e-07	1.84e-07	1.91e-07	1.92e-07
	F	6.56e-10	3.53e-10	1.58e-10	8.96e-11	6.32e-11	4.94e-11	5.94e-11
	M	4.53e-09	1.24e-09	7.60e-10	5.04e-10	4.27e-10	3.85e-10	4.22e-10
Ir-194	S	5.58e-09	1.52e-09	9.31e-10	6.20e-10	5.25e-10	4.76e-10	5.20e-10
	F	1.61e-09	9.21e-10	4.04e-10	2.85e-10	1.69e-10	1.29e-10	1.58e-10
	M	2.86e-09	1.38e-09	6.90e-10	4.93e-10	3.37e-10	2.92e-10	3.32e-10
Ir-194m	S	3.08e-09	1.46e-09	7.38e-10	5.27e-10	3.64e-10	3.19e-10	3.61e-10
	F	2.68e-08	1.96e-08	1.11e-08	7.24e-09	5.24e-09	5.28e-09	5.71e-09
	M	3.73e-08	2.41e-08	1.44e-08	9.76e-09	7.46e-09	8.16e-09	8.57e-09
Ir-195	S	5.78e-08	3.93e-08	2.38e-08	1.65e-08	1.27e-08	1.42e-08	1.48e-08
	F	2.25e-10	1.26e-10	5.59e-11	4.11e-11	2.77e-11	2.11e-11	2.49e-11
	M	3.91e-10	1.88e-10	9.52e-11	7.06e-11	5.45e-11	4.36e-11	4.92e-11
Ir-195m	S	4.03e-10	1.92e-10	9.76e-11	7.24e-11	5.61e-11	4.50e-11	5.07e-11
	F	2.60e-10	1.47e-10	6.68e-11	4.79e-11	3.27e-11	2.67e-11	3.09e-11
	M	5.74e-10	2.46e-10	1.31e-10	9.45e-11	7.52e-11	6.36e-11	7.06e-11
Ir-196m	S	6.11e-10	2.57e-10	1.37e-10	9.92e-11	7.93e-11	6.73e-11	7.46e-11
	F	2.74e-10	1.56e-10	7.52e-11	5.57e-11	3.82e-11	3.30e-11	3.73e-11
	M	4.15e-10	2.14e-10	1.11e-10	8.23e-11	6.22e-11	5.39e-11	5.97e-11
Platinum	S	4.22e-10	2.16e-10	1.12e-10	8.35e-11	6.33e-11	5.49e-11	6.08e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Pt-184	F	8.09e-11	4.05e-11	2.06e-11	1.52e-11	1.15e-11	9.83e-12	1.09e-11
	M	1.19e-10	5.44e-11	2.92e-11	2.15e-11	1.72e-11	1.48e-11	1.63e-11
	S	1.21e-10	5.51e-11	2.96e-11	2.19e-11	1.74e-11	1.51e-11	1.66e-11
Pt-186	F	1.73e-10	1.06e-10	5.10e-11	3.71e-11	2.36e-11	2.21e-11	2.48e-11
	M	2.99e-10	1.51e-10	7.80e-11	5.64e-11	3.99e-11	3.77e-11	4.15e-11
	S	3.13e-10	1.56e-10	8.06e-11	5.83e-11	4.14e-11	3.93e-11	4.32e-11
Pt-187	F	1.56e-10	8.91e-11	4.30e-11	3.14e-11	2.16e-11	1.89e-11	2.13e-11
	M	3.37e-10	1.45e-10	7.81e-11	5.68e-11	4.46e-11	3.91e-11	4.31e-11
	S	3.55e-10	1.50e-10	8.12e-11	5.90e-11	4.66e-11	4.09e-11	4.50e-11
Pt-188	F	2.49e-09	1.69e-09	8.83e-10	5.92e-10	4.02e-10	4.05e-10	4.43e-10
	M	7.26e-09	3.49e-09	2.00e-09	1.38e-09	1.03e-09	1.09e-09	1.16e-09
	S	8.83e-09	4.17e-09	2.40e-09	1.65e-09	1.25e-09	1.32e-09	1.40e-09
Pt-189	F	2.61e-10	1.57e-10	7.49e-11	5.32e-11	3.52e-11	3.25e-11	3.65e-11
	M	8.22e-10	3.07e-10	1.71e-10	1.20e-10	9.44e-11	8.64e-11	9.46e-11
	S	9.15e-10	3.31e-10	1.86e-10	1.31e-10	1.03e-10	9.47e-11	1.04e-10
Pt-190	F	1.70e-06	1.22e-06	6.83e-07	4.13e-07	2.83e-07	2.62e-07	2.94e-07
	M	9.77e-06	4.70e-06	2.78e-06	1.77e-06	1.36e-06	1.28e-06	1.40e-06
	S	3.58e-05	2.91e-05	2.10e-05	1.56e-05	1.48e-05	1.50e-05	1.53e-05
Pt-191	F	4.64e-10	2.99e-10	1.43e-10	9.92e-11	6.36e-11	6.07e-11	6.81e-11
	M	1.77e-09	6.44e-10	3.64e-10	2.51e-10	1.94e-10	1.83e-10	2.00e-10
	S	2.07e-09	7.25e-10	4.14e-10	2.85e-10	2.22e-10	2.11e-10	2.30e-10
Pt-193	F	2.40e-10	1.73e-10	9.54e-11	5.89e-11	4.14e-11	3.99e-11	4.41e-11
	M	6.56e-10	4.95e-10	2.71e-10	1.67e-10	1.19e-10	1.10e-10	1.22e-10
	S	3.89e-09	3.73e-09	2.71e-09	2.05e-09	1.96e-09	2.01e-09	2.05e-09
Pt-193m	F	5.06e-10	2.86e-10	1.31e-10	8.30e-11	5.65e-11	4.73e-11	5.52e-11
	M	3.12e-09	9.57e-10	5.67e-10	3.80e-10	3.19e-10	2.86e-10	3.13e-10
	S	3.75e-09	1.13e-09	6.73e-10	4.52e-10	3.80e-10	3.42e-10	3.74e-10
Pt-195m	F	7.03e-10	4.06e-10	1.88e-10	1.21e-10	8.11e-11	7.02e-11	8.11e-11
	M	3.88e-09	1.23e-09	7.21e-10	4.85e-10	4.01e-10	3.62e-10	3.97e-10
	S	4.64e-09	1.44e-09	8.50e-10	5.71e-10	4.74e-10	4.30e-10	4.70e-10
Pt-197	F	4.49e-10	2.46e-10	1.10e-10	7.51e-11	5.00e-11	4.03e-11	4.74e-11
	M	1.90e-09	6.08e-10	3.47e-10	2.41e-10	1.99e-10	1.73e-10	1.91e-10
	S	2.16e-09	6.71e-10	3.88e-10	2.68e-10	2.23e-10	1.94e-10	2.14e-10
Pt-197m	F	1.84e-10	1.00e-10	4.64e-11	3.35e-11	2.35e-11	1.88e-11	2.17e-11
	M	4.23e-10	1.72e-10	9.26e-11	6.69e-11	5.39e-11	4.47e-11	4.98e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Pt-199	S	4.52e-10	1.80e-10	9.73e-11	7.02e-11	5.68e-11	4.73e-11	5.26e-11
	F	1.15e-10	6.61e-11	3.11e-11	2.33e-11	1.58e-11	1.23e-11	1.43e-11
	M	1.62e-10	8.53e-11	4.29e-11	3.22e-11	2.35e-11	1.87e-11	2.13e-11
Pt-200	S	1.67e-10	8.67e-11	4.38e-11	3.28e-11	2.40e-11	1.92e-11	2.18e-11
	F	1.36e-09	7.64e-10	3.36e-10	2.40e-10	1.45e-10	1.14e-10	1.37e-10
	M	3.18e-09	1.33e-09	6.89e-10	4.90e-10	3.59e-10	3.10e-10	3.49e-10
Pt-202	S	3.47e-09	1.41e-09	7.41e-10	5.26e-10	3.90e-10	3.39e-10	3.80e-10
	F	4.90e-09	2.85e-09	1.28e-09	8.82e-10	5.22e-10	4.26e-10	5.11e-10
	M	1.03e-08	4.90e-09	2.52e-09	1.76e-09	1.23e-09	1.12e-09	1.25e-09
	S	1.15e-08	5.35e-09	2.79e-09	1.94e-09	1.38e-09	1.27e-09	1.41e-09
Gold								
Au-186	F	7.37e-11	4.26e-11	2.03e-11	1.54e-11	1.03e-11	8.39e-12	9.66e-12
	M	8.21e-11	4.76e-11	2.31e-11	1.76e-11	1.19e-11	9.73e-12	1.11e-11
	S	8.23e-11	4.77e-11	2.32e-11	1.76e-11	1.19e-11	9.76e-12	1.12e-11
Au-190	F	8.94e-11	5.18e-11	2.51e-11	1.91e-11	1.21e-11	1.08e-11	1.22e-11
	M	1.04e-10	6.07e-11	3.06e-11	2.30e-11	1.51e-11	1.37e-11	1.54e-11
	S	1.04e-10	6.09e-11	3.08e-11	2.32e-11	1.52e-11	1.38e-11	1.55e-11
Au-191	F	1.18e-10	6.51e-11	3.10e-11	2.28e-11	1.55e-11	1.41e-11	1.58e-11
	M	2.07e-10	9.39e-11	5.00e-11	3.63e-11	2.81e-11	2.52e-11	2.77e-11
	S	2.14e-10	9.60e-11	5.14e-11	3.73e-11	2.89e-11	2.61e-11	2.86e-11
Au-192	F	3.19e-10	1.89e-10	8.90e-11	6.72e-11	4.19e-11	3.94e-11	4.43e-11
	M	3.80e-10	2.27e-10	1.13e-10	8.24e-11	5.36e-11	5.23e-11	5.79e-11
	S	3.85e-10	2.30e-10	1.15e-10	8.37e-11	5.46e-11	5.34e-11	5.90e-11
Au-193	F	1.80e-10	1.05e-10	4.83e-11	3.43e-11	2.20e-11	2.04e-11	2.31e-11
	M	4.37e-10	1.74e-10	9.45e-11	6.66e-11	5.13e-11	4.71e-11	5.17e-11
	S	4.82e-10	1.86e-10	1.02e-10	7.17e-11	5.59e-11	5.13e-11	5.62e-11
Au-194	F	7.81e-10	4.98e-10	2.39e-10	1.76e-10	1.10e-10	1.07e-10	1.19e-10
	M	1.00e-09	6.26e-10	3.17e-10	2.29e-10	1.50e-10	1.53e-10	1.67e-10
	S	1.05e-09	6.51e-10	3.33e-10	2.39e-10	1.57e-10	1.63e-10	1.77e-10
Au-195	F	1.40e-09	7.73e-10	3.82e-10	2.43e-10	1.56e-10	1.47e-10	1.67e-10
	M	4.82e-09	2.78e-09	1.54e-09	1.01e-09	7.47e-10	7.35e-10	7.99e-10
	S	8.43e-09	5.48e-09	3.12e-09	2.07e-09	1.54e-09	1.54e-09	1.66e-09
Au-196	F	9.02e-10	5.51e-10	2.70e-10	1.92e-10	1.23e-10	1.22e-10	1.35e-10
	M	1.48e-09	8.04e-10	4.30e-10	3.02e-10	2.13e-10	2.20e-10	2.37e-10
	S	1.66e-09	8.86e-10	4.79e-10	3.36e-10	2.39e-10	2.49e-10	2.68e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Au-196m	F	6.11e-10	3.29e-10	1.54e-10	1.07e-10	7.61e-11	6.53e-11	7.42e-11
	M	2.11e-09	7.02e-10	4.07e-10	2.88e-10	2.48e-10	2.13e-10	2.33e-10
	S	2.31e-09	7.50e-10	4.40e-10	3.10e-10	2.69e-10	2.32e-10	2.54e-10
Au-198	F	1.66e-09	9.40e-10	4.30e-10	2.94e-10	1.79e-10	1.61e-10	1.87e-10
	M	3.60e-09	1.56e-09	8.32e-10	5.74e-10	4.21e-10	3.92e-10	4.33e-10
	S	4.06e-09	1.72e-09	9.26e-10	6.38e-10	4.75e-10	4.44e-10	4.89e-10
Au-198m	F	1.41e-09	8.06e-10	3.76e-10	2.58e-10	1.67e-10	1.55e-10	1.76e-10
	M	4.94e-09	1.70e-09	9.76e-10	6.73e-10	5.43e-10	4.98e-10	5.44e-10
	S	5.71e-09	1.90e-09	1.11e-09	7.61e-10	6.20e-10	5.69e-10	6.21e-10
Au-199	F	6.74e-10	3.63e-10	1.68e-10	1.11e-10	7.20e-11	6.43e-11	7.41e-11
	M	3.17e-09	9.63e-10	5.70e-10	3.87e-10	3.22e-10	2.91e-10	3.18e-10
	S	3.74e-09	1.11e-09	6.63e-10	4.49e-10	3.76e-10	3.41e-10	3.73e-10
Au-200	F	1.89e-10	1.09e-10	5.07e-11	3.86e-11	2.47e-11	1.86e-11	2.21e-11
	M	2.43e-10	1.36e-10	6.69e-11	5.10e-11	3.50e-11	2.70e-11	3.13e-11
	S	2.45e-10	1.37e-10	6.74e-11	5.14e-11	3.54e-11	2.73e-11	3.16e-11
Au-200m	F	1.38e-09	8.43e-10	3.92e-10	2.86e-10	1.80e-10	1.69e-10	1.91e-10
	M	2.48e-09	1.20e-09	6.26e-10	4.47e-10	3.19e-10	3.03e-10	3.33e-10
	S	2.67e-09	1.26e-09	6.63e-10	4.73e-10	3.40e-10	3.24e-10	3.56e-10
Au-201	F	7.93e-11	4.59e-11	2.17e-11	1.63e-11	1.13e-11	8.89e-12	1.03e-11
	M	9.89e-11	5.60e-11	2.77e-11	2.09e-11	1.54e-11	1.21e-11	1.38e-11
	S	9.95e-11	5.63e-11	2.79e-11	2.10e-11	1.55e-11	1.22e-11	1.39e-11
Mercury								
Hg-190	F	5.89e-11	3.19e-11	1.58e-11	1.19e-11	8.18e-12	7.21e-12	8.09e-12
	M	6.17e-11	3.35e-11	1.73e-11	1.29e-11	8.98e-12	8.03e-12	8.94e-12
	S	6.19e-11	3.36e-11	1.73e-11	1.30e-11	9.01e-12	8.06e-12	8.98e-12
Hg-191m	F	1.58e-10	8.69e-11	4.28e-11	3.17e-11	2.27e-11	2.03e-11	2.26e-11
	M	1.78e-10	8.89e-11	4.66e-11	3.42e-11	2.54e-11	2.29e-11	2.52e-11
	S	1.82e-10	9.01e-11	4.74e-11	3.47e-11	2.58e-11	2.34e-11	2.58e-11
Hg-192	F	5.00e-10	2.75e-10	1.34e-10	9.74e-11	6.75e-11	6.38e-11	7.06e-11
	M	5.31e-10	2.85e-10	1.44e-10	1.04e-10	7.15e-11	6.92e-11	7.61e-11
	S	5.40e-10	2.92e-10	1.48e-10	1.07e-10	7.32e-11	7.10e-11	7.81e-11
Hg-193	F	2.96e-10	1.58e-10	7.77e-11	5.65e-11	4.08e-11	3.71e-11	4.11e-11
	M	3.15e-10	1.47e-10	7.73e-11	5.55e-11	4.10e-11	3.81e-11	4.19e-11
	S	3.24e-10	1.49e-10	7.89e-11	5.66e-11	4.19e-11	3.91e-11	4.29e-11
Hg-193m	F	1.03e-09	5.71e-10	2.77e-10	1.96e-10	1.36e-10	1.28e-10	1.42e-10

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Hg-194	M	1.14e-09	5.56e-10	2.88e-10	2.04e-10	1.45e-10	1.38e-10	1.52e-10
	S	1.18e-09	5.69e-10	2.96e-10	2.11e-10	1.50e-10	1.43e-10	1.57e-10
	F	2.44e-08	1.73e-08	9.01e-09	5.82e-09	3.75e-09	4.23e-09	4.57e-09
	M	2.14e-08	1.57e-08	9.24e-09	6.23e-09	4.66e-09	5.32e-09	5.55e-09
Hg-195	S	1.28e-07	1.29e-07	1.08e-07	9.13e-08	9.49e-08	9.98e-08	9.95e-08
	F	3.58e-10	1.78e-10	8.92e-11	6.36e-11	4.87e-11	4.31e-11	4.77e-11
	M	5.66e-10	1.72e-10	1.00e-10	6.92e-11	5.60e-11	5.10e-11	5.59e-11
	S	6.15e-10	1.85e-10	1.09e-10	7.49e-11	6.08e-11	5.56e-11	6.09e-11
Hg-195m	F	1.80e-09	9.79e-10	4.70e-10	3.20e-10	2.25e-10	2.05e-10	2.30e-10
	M	3.02e-09	1.00e-09	5.73e-10	3.89e-10	3.11e-10	2.84e-10	3.12e-10
	S	3.36e-09	1.06e-09	6.24e-10	4.25e-10	3.44e-10	3.16e-10	3.46e-10
	F	9.38e-10	4.98e-10	2.41e-10	1.63e-10	1.16e-10	1.04e-10	1.17e-10
Hg-197	M	2.16e-09	5.99e-10	3.60e-10	2.43e-10	2.02e-10	1.83e-10	2.01e-10
	S	2.45e-09	6.43e-10	3.97e-10	2.68e-10	2.26e-10	2.05e-10	2.24e-10
	F	1.46e-09	7.98e-10	3.80e-10	2.62e-10	1.88e-10	1.64e-10	1.85e-10
	M	2.77e-09	8.91e-10	5.16e-10	3.55e-10	2.95e-10	2.61e-10	2.87e-10
Hg-199m	S	3.07e-09	9.34e-10	5.53e-10	3.80e-10	3.21e-10	2.85e-10	3.12e-10
	F	1.42e-10	8.04e-11	3.91e-11	2.90e-11	2.20e-11	1.79e-11	2.02e-11
	M	1.65e-10	8.86e-11	4.56e-11	3.42e-11	2.74e-11	2.21e-11	2.46e-11
	S	1.66e-10	8.89e-11	4.59e-11	3.44e-11	2.76e-11	2.22e-11	2.48e-11
Hg-203	F	8.03e-09	4.91e-09	2.40e-09	1.53e-09	9.78e-10	9.84e-10	1.10e-09
	M	9.48e-09	4.44e-09	2.47e-09	1.63e-09	1.23e-09	1.22e-09	1.32e-09
	S	1.09e-08	4.96e-09	2.84e-09	1.91e-09	1.47e-09	1.46e-09	1.57e-09
Thallium								
Tl-194	F	1.06e-10	6.24e-11	2.95e-11	2.25e-11	1.41e-11	1.08e-11	1.28e-11
	M	1.31e-10	7.61e-11	3.72e-11	2.84e-11	1.84e-11	1.48e-11	1.72e-11
	S	1.32e-10	7.66e-11	3.75e-11	2.86e-11	1.85e-11	1.49e-11	1.73e-11
	F	1.02e-10	5.73e-11	2.84e-11	2.14e-11	1.45e-11	1.25e-11	1.41e-11
Tl-194m	M	1.33e-10	7.21e-11	3.71e-11	2.79e-11	1.99e-11	1.75e-11	1.95e-11
	S	1.34e-10	7.26e-11	3.74e-11	2.82e-11	2.01e-11	1.77e-11	1.97e-11
	F	6.57e-11	3.72e-11	1.82e-11	1.31e-11	8.38e-12	7.75e-12	8.74e-12
	M	1.31e-10	5.74e-11	3.07e-11	2.21e-11	1.59e-11	1.49e-11	1.64e-11
Tl-195	S	1.39e-10	6.00e-11	3.23e-11	2.32e-11	1.68e-11	1.59e-11	1.75e-11
	F	1.45e-10	8.49e-11	4.06e-11	3.02e-11	1.86e-11	1.58e-11	1.83e-11
	M	2.01e-10	1.16e-10	5.75e-11	4.28e-11	2.77e-11	2.54e-11	2.85e-11
	S							

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Tl-197	S	2.04e-10	1.18e-10	5.85e-11	4.35e-11	2.83e-11	2.60e-11	2.92e-11
	F	8.66e-11	4.75e-11	2.25e-11	1.56e-11	1.03e-11	9.13e-12	1.04e-11
	M	2.14e-10	8.16e-11	4.49e-11	3.19e-11	2.48e-11	2.25e-11	2.47e-11
Tl-198	S	2.33e-10	8.59e-11	4.79e-11	3.40e-11	2.67e-11	2.42e-11	2.66e-11
	F	2.21e-10	1.35e-10	6.72e-11	4.81e-11	2.99e-11	2.82e-11	3.18e-11
	M	3.43e-10	2.13e-10	1.06e-10	7.71e-11	4.93e-11	4.98e-11	5.48e-11
Tl-198m	S	3.59e-10	2.24e-10	1.11e-10	8.08e-11	5.17e-11	5.26e-11	5.78e-11
	F	1.95e-10	1.13e-10	5.46e-11	3.94e-11	2.66e-11	2.31e-11	2.62e-11
	M	3.26e-10	1.73e-10	8.92e-11	6.55e-11	4.84e-11	4.33e-11	4.78e-11
Tl-199	S	3.36e-10	1.78e-10	9.18e-11	6.74e-11	5.00e-11	4.48e-11	4.94e-11
	F	1.11e-10	6.38e-11	2.94e-11	2.03e-11	1.34e-11	1.17e-11	1.34e-11
	M	2.49e-10	1.11e-10	5.84e-11	4.19e-11	3.22e-11	2.88e-11	3.17e-11
Tl-200	S	2.65e-10	1.16e-10	6.18e-11	4.44e-11	3.43e-11	3.08e-11	3.39e-11
	F	6.37e-10	4.04e-10	2.02e-10	1.37e-10	8.64e-11	8.28e-11	9.31e-11
	M	9.40e-10	6.00e-10	3.02e-10	2.16e-10	1.39e-10	1.42e-10	1.56e-10
Tl-201	S	9.98e-10	6.40e-10	3.21e-10	2.32e-10	1.50e-10	1.54e-10	1.68e-10
	F	3.72e-10	2.12e-10	9.48e-11	5.88e-11	3.67e-11	3.28e-11	3.84e-11
	M	1.03e-09	3.52e-10	1.99e-10	1.34e-10	1.06e-10	9.78e-11	1.07e-10
Tl-202	S	1.17e-09	3.81e-10	2.21e-10	1.51e-10	1.20e-10	1.12e-10	1.22e-10
	F	1.44e-09	9.42e-10	4.71e-10	3.09e-10	1.96e-10	1.91e-10	2.14e-10
	M	1.79e-09	1.09e-09	5.88e-10	4.07e-10	2.83e-10	3.04e-10	3.26e-10
Tl-204	S	1.93e-09	1.16e-09	6.36e-10	4.45e-10	3.15e-10	3.44e-10	3.66e-10
	F	5.51e-09	3.19e-09	1.33e-09	7.53e-10	4.57e-10	3.55e-10	4.45e-10
	M	2.59e-08	1.44e-08	8.25e-09	5.44e-09	4.20e-09	4.02e-09	4.36e-09
	S	7.61e-08	5.84e-08	3.82e-08	2.63e-08	2.28e-08	2.32e-08	2.42e-08
Lead								
Pb-194	F	6.43e-11	3.65e-11	1.74e-11	1.31e-11	8.88e-12	7.39e-12	8.44e-12
	M	6.93e-11	3.96e-11	1.98e-11	1.50e-11	1.02e-11	8.47e-12	9.65e-12
	S	6.94e-11	3.97e-11	1.98e-11	1.50e-11	1.03e-11	8.49e-12	9.67e-12
Pb-195m	F	1.25e-10	6.85e-11	3.35e-11	2.47e-11	1.85e-11	1.61e-11	1.79e-11
	M	1.02e-10	5.04e-11	2.65e-11	1.97e-11	1.52e-11	1.32e-11	1.46e-11
	S	1.02e-10	5.04e-11	2.66e-11	1.97e-11	1.52e-11	1.32e-11	1.46e-11
Pb-196	F	1.29e-10	7.36e-11	3.54e-11	2.62e-11	1.84e-11	1.62e-11	1.81e-11
	M	1.18e-10	6.59e-11	3.34e-11	2.48e-11	1.77e-11	1.57e-11	1.75e-11
	S	1.19e-10	6.61e-11	3.35e-11	2.49e-11	1.77e-11	1.58e-11	1.76e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Pb-197m	F	2.42e-10	1.39e-10	6.69e-11	4.90e-11	3.59e-11	3.14e-11	3.50e-11
	M	2.13e-10	1.07e-10	5.64e-11	4.17e-11	3.22e-11	2.78e-11	3.07e-11
	S	2.16e-10	1.07e-10	5.66e-11	4.18e-11	3.24e-11	2.80e-11	3.09e-11
Pb-198	F	3.55e-10	2.07e-10	1.00e-10	7.27e-11	5.11e-11	4.70e-11	5.22e-11
	M	2.87e-10	1.64e-10	8.27e-11	6.03e-11	4.19e-11	3.97e-11	4.37e-11
	S	2.90e-10	1.67e-10	8.39e-11	6.12e-11	4.24e-11	4.05e-11	4.46e-11
Pb-199	F	1.82e-10	1.05e-10	5.00e-11	3.65e-11	2.54e-11	2.30e-11	2.57e-11
	M	1.32e-10	6.83e-11	3.50e-11	2.56e-11	1.78e-11	1.66e-11	1.84e-11
	S	1.31e-10	6.79e-11	3.48e-11	2.54e-11	1.77e-11	1.66e-11	1.83e-11
Pb-200	F	1.95e-09	1.16e-09	5.57e-10	3.92e-10	2.66e-10	2.47e-10	2.76e-10
	M	1.62e-09	7.37e-10	3.99e-10	2.81e-10	2.05e-10	1.98e-10	2.16e-10
	S	1.69e-09	7.59e-10	4.13e-10	2.92e-10	2.14e-10	2.08e-10	2.27e-10
Pb-201	F	6.46e-10	3.81e-10	1.79e-10	1.29e-10	8.54e-11	8.02e-11	8.97e-11
	M	5.10e-10	2.59e-10	1.32e-10	9.47e-11	6.53e-11	6.25e-11	6.90e-11
	S	5.21e-10	2.61e-10	1.34e-10	9.58e-11	6.68e-11	6.41e-11	7.06e-11
Pb-202	F	9.18e-08	5.25e-08	2.85e-08	2.78e-08	2.97e-08	2.06e-08	2.22e-08
	M	8.02e-08	4.45e-08	2.65e-08	1.97e-08	1.87e-08	1.54e-08	1.65e-08
	S	3.15e-07	2.84e-07	2.15e-07	1.67e-07	1.63e-07	1.67e-07	1.69e-07
Pb-202m	F	4.34e-10	2.55e-10	1.21e-10	8.83e-11	6.07e-11	5.70e-11	6.32e-11
	M	4.21e-10	2.32e-10	1.17e-10	8.59e-11	5.98e-11	5.60e-11	6.18e-11
	S	4.25e-10	2.34e-10	1.18e-10	8.66e-11	6.03e-11	5.65e-11	6.24e-11
Pb-203	F	1.19e-09	6.86e-10	3.16e-10	2.22e-10	1.49e-10	1.45e-10	1.61e-10
	M	8.88e-10	4.26e-10	2.24e-10	1.57e-10	1.12e-10	1.09e-10	1.19e-10
	S	9.08e-10	4.34e-10	2.31e-10	1.62e-10	1.17e-10	1.14e-10	1.25e-10
Pb-204m	F	1.07e-10	6.26e-11	2.97e-11	2.22e-11	1.43e-11	1.36e-11	1.52e-11
	M	1.17e-10	6.91e-11	3.46e-11	2.58e-11	1.66e-11	1.58e-11	1.76e-11
	S	1.17e-10	6.94e-11	3.47e-11	2.59e-11	1.67e-11	1.59e-11	1.77e-11
Pb-205	F	1.09e-09	6.29e-10	3.18e-10	2.50e-10	1.85e-10	1.67e-10	1.83e-10
	M	7.96e-10	5.50e-10	3.02e-10	2.02e-10	1.51e-10	1.38e-10	1.52e-10
	S	4.21e-09	4.12e-09	3.12e-09	2.43e-09	2.37e-09	2.41e-09	2.45e-09
Pb-209	F	3.71e-10	2.14e-10	9.90e-11	7.19e-11	5.41e-11	4.59e-11	5.15e-11
	M	3.13e-10	1.40e-10	7.37e-11	5.42e-11	4.43e-11	3.59e-11	4.00e-11
	S	3.17e-10	1.40e-10	7.40e-11	5.44e-11	4.45e-11	3.61e-11	4.02e-11
Pb-210	F	8.01e-06	3.73e-06	2.01e-06	1.59e-06	8.09e-07	5.54e-07	7.10e-07
	M	6.63e-06	4.15e-06	2.53e-06	1.71e-06	1.14e-06	1.02e-06	1.14e-06

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Pb-211	S	3.55e-05	3.32e-05	2.34e-05	1.70e-05	1.59e-05	1.64e-05	1.68e-05
	F	1.24e-07	6.29e-08	3.20e-08	2.34e-08	1.94e-08	1.65e-08	1.81e-08
	M	1.05e-07	3.43e-08	2.13e-08	1.57e-08	1.51e-08	1.23e-08	1.33e-08
Pb-212	S	1.05e-07	3.40e-08	2.12e-08	1.56e-08	1.50e-08	1.23e-08	1.33e-08
	F	1.41e-06	8.03e-07	3.78e-07	2.70e-07	2.03e-07	1.81e-07	2.01e-07
	M	1.32e-06	3.50e-07	2.19e-07	1.50e-07	1.34e-07	1.17e-07	1.28e-07
Pb-214	S	1.42e-06	3.62e-07	2.29e-07	1.57e-07	1.41e-07	1.23e-07	1.34e-07
	F	9.75e-08	5.16e-08	2.59e-08	1.89e-08	1.55e-08	1.33e-08	1.46e-08
	M	9.02e-08	3.34e-08	2.03e-08	1.51e-08	1.46e-08	1.18e-08	1.28e-08
	S	9.06e-08	3.34e-08	2.03e-08	1.52e-08	1.47e-08	1.19e-08	1.29e-08
Bismuth								
Bi-200	F	1.49e-10	8.18e-11	4.17e-11	3.08e-11	2.09e-11	1.89e-11	2.11e-11
	M	1.59e-10	8.57e-11	4.41e-11	3.26e-11	2.25e-11	2.06e-11	2.29e-11
	S	1.62e-10	8.67e-11	4.47e-11	3.31e-11	2.29e-11	2.10e-11	2.33e-11
Bi-201	F	3.05e-10	1.68e-10	8.38e-11	6.15e-11	4.13e-11	3.81e-11	4.25e-11
	M	3.28e-10	1.75e-10	8.83e-11	6.47e-11	4.44e-11	4.10e-11	4.56e-11
	S	3.34e-10	1.77e-10	8.94e-11	6.54e-11	4.52e-11	4.18e-11	4.64e-11
Bi-202	F	2.44e-10	1.41e-10	7.09e-11	5.24e-11	3.49e-11	3.30e-11	3.66e-11
	M	2.50e-10	1.43e-10	7.21e-11	5.33e-11	3.56e-11	3.37e-11	3.73e-11
	S	2.51e-10	1.44e-10	7.25e-11	5.36e-11	3.58e-11	3.39e-11	3.76e-11
Bi-203	F	9.84e-10	6.23e-10	3.08e-10	2.23e-10	1.43e-10	1.42e-10	1.57e-10
	M	1.14e-09	6.82e-10	3.43e-10	2.47e-10	1.62e-10	1.62e-10	1.78e-10
	S	1.18e-09	6.96e-10	3.51e-10	2.53e-10	1.67e-10	1.67e-10	1.83e-10
Bi-204	F	1.15e-09	7.36e-10	3.64e-10	2.64e-10	1.70e-10	1.69e-10	1.86e-10
	M	1.29e-09	7.87e-10	3.92e-10	2.84e-10	1.85e-10	1.85e-10	2.04e-10
	S	1.32e-09	7.99e-10	3.99e-10	2.89e-10	1.89e-10	1.89e-10	2.08e-10
Bi-205	F	2.12e-09	1.51e-09	7.88e-10	5.55e-10	3.66e-10	3.85e-10	4.17e-10
	M	4.59e-09	2.99e-09	1.66e-09	1.16e-09	8.16e-10	9.14e-10	9.67e-10
	S	5.48e-09	3.54e-09	1.98e-09	1.39e-09	9.82e-10	1.11e-09	1.17e-09
Bi-206	F	4.11e-09	2.79e-09	1.43e-09	1.01e-09	6.64e-10	6.81e-10	7.43e-10
	M	7.40e-09	4.34e-09	2.33e-09	1.64e-09	1.14e-09	1.21e-09	1.30e-09
	S	8.35e-09	4.80e-09	2.60e-09	1.83e-09	1.28e-09	1.37e-09	1.47e-09
Bi-207	F	4.49e-09	3.10e-09	1.75e-09	1.17e-09	8.53e-10	8.66e-10	9.32e-10
	M	2.90e-08	2.03e-08	1.23e-08	8.52e-09	6.54e-09	7.26e-09	7.57e-09
	S	1.88e-07	1.82e-07	1.47e-07	1.23e-07	1.27e-07	1.36e-07	1.35e-07

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Bi-208	F	4.42e-09	3.23e-09	1.90e-09	1.29e-09	9.62e-10	1.02e-09	1.08e-09
	M	2.18e-08	1.66e-08	1.03e-08	7.26e-09	5.56e-09	6.66e-09	6.83e-09
	S	2.00e-07	2.05e-07	1.76e-07	1.51e-07	1.59e-07	1.68e-07	1.67e-07
Bi-210	F	1.32e-07	4.75e-08	2.71e-08	1.84e-08	7.11e-09	5.12e-09	7.21e-09
	M	4.48e-07	2.01e-07	1.19e-07	7.77e-08	5.48e-08	5.05e-08	5.63e-08
	S	6.62e-07	3.36e-07	1.98e-07	1.29e-07	9.91e-08	9.41e-08	1.02e-07
Bi-210m	F	2.40e-06	7.55e-07	4.50e-07	2.84e-07	2.32e-07	2.03e-07	2.26e-07
	M	1.92e-05	8.28e-06	4.95e-06	3.22e-06	2.53e-06	2.38e-06	2.59e-06
	S	6.45e-05	4.98e-05	3.57e-05	2.66e-05	2.50e-05	2.54e-05	2.60e-05
Bi-212	F	1.91e-07	7.04e-08	4.24e-08	3.14e-08	3.00e-08	2.45e-08	2.65e-08
	M	1.98e-07	7.25e-08	4.37e-08	3.25e-08	3.10e-08	2.53e-08	2.74e-08
	S	2.00e-07	7.30e-08	4.41e-08	3.27e-08	3.12e-08	2.55e-08	2.76e-08
Bi-213	F	1.66e-07	6.76e-08	3.97e-08	2.98e-08	2.83e-08	2.30e-08	2.49e-08
	M	1.70e-07	6.91e-08	4.07e-08	3.05e-08	2.90e-08	2.35e-08	2.54e-08
	S	1.71e-07	6.94e-08	4.09e-08	3.07e-08	2.92e-08	2.37e-08	2.56e-08
Bi-214	F	7.80e-08	3.28e-08	1.89e-08	1.41e-08	1.32e-08	1.08e-08	1.17e-08
	M	7.90e-08	3.31e-08	1.91e-08	1.43e-08	1.34e-08	1.09e-08	1.18e-08
	S	7.93e-08	3.33e-08	1.92e-08	1.44e-08	1.34e-08	1.10e-08	1.19e-08
Polonium								
Po-203	F	2.20e-10	1.01e-10	5.41e-11	3.96e-11	3.00e-11	2.67e-11	2.94e-11
	M	2.40e-10	1.08e-10	5.86e-11	4.29e-11	3.28e-11	2.94e-11	3.23e-11
	S	2.45e-10	1.10e-10	5.97e-11	4.37e-11	3.35e-11	3.00e-11	3.30e-11
Po-204	F	2.76e-09	8.64e-10	5.06e-10	3.57e-10	2.91e-10	2.58e-10	2.83e-10
	M	3.68e-09	1.08e-09	6.49e-10	4.55e-10	3.84e-10	3.41e-10	3.73e-10
	S	3.91e-09	1.13e-09	6.84e-10	4.79e-10	4.06e-10	3.61e-10	3.94e-10
Po-205	F	2.01e-10	9.12e-11	4.88e-11	3.55e-11	2.55e-11	2.38e-11	2.62e-11
	M	2.30e-10	1.04e-10	5.63e-11	4.07e-11	2.98e-11	2.84e-11	3.10e-11
	S	2.39e-10	1.07e-10	5.86e-11	4.23e-11	3.11e-11	2.98e-11	3.25e-11
Po-206	F	2.21e-07	6.90e-08	3.57e-08	2.44e-08	1.18e-08	9.66e-09	1.23e-08
	M	4.29e-07	1.11e-07	6.85e-08	4.56e-08	3.69e-08	3.33e-08	3.68e-08
	S	4.87e-07	1.24e-07	7.80e-08	5.18e-08	4.39e-08	3.99e-08	4.36e-08
Po-207	F	3.46e-10	1.84e-10	9.38e-11	6.78e-11	4.50e-11	4.33e-11	4.80e-11
	M	4.38e-10	2.13e-10	1.10e-10	7.94e-11	5.49e-11	5.28e-11	5.82e-11
	S	4.63e-10	2.23e-10	1.17e-10	8.45e-11	5.96e-11	5.76e-11	6.31e-11
Po-208	F	4.76e-05	1.16e-05	6.34e-06	4.51e-06	1.33e-06	9.16e-07	1.49e-06

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Po-209	M	3.13e-05	1.17e-05	6.96e-06	4.64e-06	2.89e-06	2.59e-06	2.98e-06
	S	4.16e-05	2.52e-05	1.57e-05	1.02e-05	8.18e-06	8.00e-06	8.56e-06
	F	4.92e-05	1.18e-05	6.48e-06	4.61e-06	1.34e-06	9.27e-07	1.51e-06
	M	3.19e-05	1.20e-05	7.21e-06	4.80e-06	2.96e-06	2.66e-06	3.07e-06
Po-210	S	6.16e-05	4.64e-05	3.27e-05	2.40e-05	2.23e-05	2.27e-05	2.33e-05
	F	3.09e-05	8.12e-06	4.36e-06	3.10e-06	9.65e-07	6.77e-07	1.06e-06
	M	2.32e-05	8.06e-06	4.75e-06	3.17e-06	2.08e-06	1.87e-06	2.13e-06
	S	2.45e-05	1.05e-05	6.28e-06	4.11e-06	3.21e-06	3.01e-06	3.28e-06
Astatine								
At-205	F	4.32e-09	1.36e-09	8.31e-10	5.88e-10	5.54e-10	4.55e-10	4.96e-10
	M	6.79e-09	1.92e-09	1.24e-09	9.05e-10	8.76e-10	7.21e-10	7.80e-10
	S	6.87e-09	1.94e-09	1.25e-09	9.15e-10	8.86e-10	7.30e-10	7.89e-10
At-206	F	1.00e-09	3.88e-10	2.04e-10	1.38e-10	9.12e-11	7.47e-11	8.75e-11
	M	1.79e-09	5.05e-10	3.11e-10	2.16e-10	1.84e-10	1.60e-10	1.76e-10
	S	1.94e-09	5.35e-10	3.34e-10	2.31e-10	2.02e-10	1.76e-10	1.92e-10
At-207	F	9.88e-09	4.13e-09	2.18e-09	1.30e-09	1.06e-09	8.57e-10	9.79e-10
	M	2.15e-08	5.54e-09	3.58e-09	2.52e-09	2.36e-09	1.99e-09	2.16e-09
	S	2.21e-08	5.58e-09	3.64e-09	2.58e-09	2.43e-09	2.05e-09	2.23e-09
At-208	F	3.90e-09	1.36e-09	7.21e-10	4.86e-10	2.05e-10	1.55e-10	2.10e-10
	M	3.54e-09	1.25e-09	7.48e-10	5.11e-10	3.63e-10	3.18e-10	3.58e-10
	S	4.18e-09	2.07e-09	1.29e-09	8.56e-10	6.99e-10	6.64e-10	7.13e-10
At-209	F	1.68e-08	9.63e-09	4.59e-09	2.26e-09	1.52e-09	1.14e-09	1.43e-09
	M	2.85e-08	7.44e-09	4.63e-09	3.08e-09	2.73e-09	2.34e-09	2.57e-09
	S	2.96e-08	7.15e-09	4.67e-09	3.23e-09	2.93e-09	2.56e-09	2.78e-09
At-210	F	8.35e-08	3.70e-08	1.83e-08	1.08e-08	4.40e-09	3.08e-09	4.46e-09
	M	5.91e-08	2.28e-08	1.31e-08	8.47e-09	5.51e-09	4.88e-09	5.61e-09
	S	6.02e-08	2.62e-08	1.56e-08	1.02e-08	7.92e-09	7.45e-09	8.13e-09
At-211	F	7.23e-07	4.45e-07	2.08e-07	1.01e-07	6.67e-08	4.97e-08	6.27e-08
	M	1.00e-06	2.97e-07	1.78e-07	1.18e-07	1.04e-07	8.83e-08	9.73e-08
	S	1.02e-06	2.66e-07	1.69e-07	1.17e-07	1.07e-07	9.17e-08	9.99e-08
Francium								
Fr-212	F	2.31e-08	7.74e-09	4.73e-09	3.47e-09	3.28e-09	2.69e-09	2.92e-09
	M	3.44e-08	1.09e-08	6.87e-09	5.06e-09	4.89e-09	4.00e-09	4.33e-09
	S	3.48e-08	1.11e-08	7.00e-09	5.15e-09	4.98e-09	4.08e-09	4.41e-09
Fr-222	F	1.14e-07	4.68e-08	2.67e-08	1.98e-08	1.83e-08	1.50e-08	1.63e-08

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Fr-223	M	1.54e-07	6.07e-08	3.54e-08	2.64e-08	2.49e-08	2.03e-08	2.20e-08
	S	1.55e-07	6.10e-08	3.57e-08	2.66e-08	2.51e-08	2.05e-08	2.22e-08
	F	5.70e-09	1.64e-09	6.16e-10	3.93e-10	3.28e-10	1.48e-10	2.12e-10
	M	4.62e-08	1.23e-08	7.59e-09	5.03e-09	4.27e-09	3.82e-09	4.19e-09
	S	5.68e-08	1.53e-08	9.51e-09	6.29e-09	5.33e-09	4.81e-09	5.27e-09
Radium								
Ra-223	F	4.50e-06	1.10e-06	4.60e-07	3.12e-07	3.02e-07	1.68e-07	2.11e-07
	M	3.47e-05	9.17e-06	5.69e-06	3.77e-06	3.22e-06	2.88e-06	3.16e-06
	S	4.26e-05	1.15e-05	7.14e-06	4.72e-06	4.00e-06	3.61e-06	3.95e-06
Ra-224	F	2.57e-06	6.75e-07	2.99e-07	1.98e-07	1.82e-07	1.16e-07	1.40e-07
	M	1.90e-05	4.52e-06	2.88e-06	1.92e-06	1.67e-06	1.49e-06	1.63e-06
	S	2.29e-05	5.44e-06	3.49e-06	2.33e-06	2.03e-06	1.81e-06	1.98e-06
Ra-225	F	5.16e-06	9.57e-07	2.91e-07	1.84e-07	1.95e-07	5.28e-08	9.61e-08
	M	1.72e-05	6.16e-06	3.52e-06	2.28e-06	1.82e-06	1.66e-06	1.83e-06
	S	2.19e-05	8.24e-06	4.81e-06	3.12e-06	2.47e-06	2.29e-06	2.51e-06
Ra-226	F	3.51e-06	8.95e-07	4.19e-07	4.11e-07	5.19e-07	1.55e-07	2.15e-07
	M	1.92e-05	8.14e-06	4.84e-06	3.22e-06	2.62e-06	2.32e-06	2.54e-06
	S	6.25e-05	4.80e-05	3.44e-05	2.56e-05	2.40e-05	2.43e-05	2.49e-05
Ra-227	F	1.21e-09	8.50e-10	4.49e-10	2.96e-10	2.48e-10	2.32e-10	2.50e-10
	M	8.25e-10	6.14e-10	3.48e-10	2.29e-10	1.93e-10	1.89e-10	2.01e-10
	S	1.22e-09	1.01e-09	6.84e-10	4.94e-10	4.51e-10	4.57e-10	4.71e-10
Ra-228	F	2.25e-05	5.28e-06	1.99e-06	1.97e-06	2.13e-06	3.72e-07	7.14e-07
	M	1.75e-05	1.06e-05	5.39e-06	3.56e-06	2.98e-06	2.01e-06	2.36e-06
	S	8.79e-05	8.51e-05	5.88e-05	4.09e-05	3.82e-05	3.98e-05	4.07e-05
Ra-230	F	5.87e-10	3.15e-10	1.52e-10	1.14e-10	7.90e-11	6.05e-11	7.04e-11
	M	7.34e-10	3.73e-10	1.88e-10	1.42e-10	1.02e-10	8.08e-11	9.24e-11
	S	7.47e-10	3.78e-10	1.91e-10	1.44e-10	1.05e-10	8.26e-11	9.44e-11
Actinium								
Ac-224	F	4.63e-07	1.15e-07	7.12e-08	4.87e-08	4.38e-08	3.72e-08	4.09e-08
	M	7.26e-07	1.79e-07	1.14e-07	7.73e-08	6.84e-08	6.01e-08	6.57e-08
	S	7.98e-07	1.97e-07	1.26e-07	8.52e-08	7.52e-08	6.63e-08	7.24e-08
Ac-225	F	1.84e-05	5.49e-06	2.95e-06	1.85e-06	1.63e-06	1.38e-06	1.54e-06
	M	3.60e-05	9.66e-06	5.93e-06	3.90e-06	3.33e-06	2.98e-06	3.27e-06
	S	4.11e-05	1.09e-05	6.83e-06	4.52e-06	3.84e-06	3.47e-06	3.80e-06
Ac-226	F	7.10e-06	1.77e-06	1.11e-06	7.45e-07	6.62e-07	5.79e-07	6.34e-07

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Ac-227	M	9.81e-06	2.34e-06	1.50e-06	1.01e-06	8.97e-07	7.92e-07	8.65e-07
	S	1.05e-05	2.49e-06	1.60e-06	1.08e-06	9.58e-07	8.47e-07	9.25e-07
	F	2.02e-04	1.65e-04	9.78e-05	6.44e-05	5.94e-05	5.89e-05	6.15e-05
	M	1.73e-04	1.39e-04	8.10e-05	5.25e-05	4.56e-05	4.60e-05	4.83e-05
Ac-228	S	2.85e-04	2.50e-04	1.73e-04	1.24e-04	1.15e-04	1.18e-04	1.21e-04
	F	4.66e-08	3.04e-08	1.32e-08	6.71e-09	5.25e-09	3.86e-09	4.68e-09
	M	5.36e-08	3.22e-08	1.62e-08	9.39e-09	7.23e-09	6.17e-09	7.01e-09
	S	6.97e-08	4.50e-08	2.75e-08	1.78e-08	1.41e-08	1.37e-08	1.47e-08
Thorium								
Th-226	F	1.86e-07	7.64e-08	4.29e-08	3.13e-08	2.83e-08	2.34e-08	2.55e-08
	M	3.88e-07	1.38e-07	8.37e-08	6.21e-08	5.94e-08	4.85e-08	5.25e-08
	S	3.93e-07	1.40e-07	8.47e-08	6.29e-08	6.01e-08	4.91e-08	5.31e-08
Th-227	F	1.25e-05	5.30e-06	1.76e-06	8.19e-07	6.75e-07	3.16e-07	4.77e-07
	M	2.80e-05	9.79e-06	5.64e-06	3.63e-06	2.94e-06	2.66e-06	2.93e-06
	S	3.59e-05	1.28e-05	7.56e-06	4.92e-06	3.94e-06	3.64e-06	3.99e-06
Th-228	F	2.70e-04	1.77e-04	6.60e-05	3.28e-05	2.18e-05	1.42e-05	1.91e-05
	M	1.46e-04	8.75e-05	4.33e-05	2.49e-05	1.91e-05	1.60e-05	1.83e-05
	S	1.89e-04	1.22e-04	7.45e-05	4.82e-05	3.81e-05	3.70e-05	3.97e-05
Th-229	F	5.35e-04	4.36e-04	2.27e-04	1.48e-04	1.13e-04	9.96e-05	1.10e-04
	M	2.17e-04	1.74e-04	1.02e-04	6.57e-05	5.58e-05	5.15e-05	5.53e-05
	S	3.73e-04	3.33e-04	2.44e-04	1.84e-04	1.76e-04	1.78e-04	1.82e-04
Th-230	F	1.29e-04	1.08e-04	5.79e-05	3.95e-05	3.15e-05	2.85e-05	3.10e-05
	M	5.47e-05	4.15e-05	2.52e-05	1.69e-05	1.49e-05	1.40e-05	1.48e-05
	S	6.64e-05	5.25e-05	3.79e-05	2.84e-05	2.67e-05	2.69e-05	2.76e-05
Th-231	F	4.22e-10	2.38e-10	1.02e-10	6.08e-11	4.54e-11	3.47e-11	4.12e-11
	M	1.89e-09	5.24e-10	3.16e-10	2.14e-10	1.83e-10	1.61e-10	1.77e-10
	S	2.18e-09	5.92e-10	3.63e-10	2.48e-10	2.13e-10	1.89e-10	2.07e-10
Th-232	F	1.36e-04	1.17e-04	6.82e-05	4.86e-05	3.88e-05	3.35e-05	3.65e-05
	M	5.47e-05	4.40e-05	2.84e-05	1.97e-05	1.76e-05	1.58e-05	1.68e-05
	S	1.51e-04	1.48e-04	1.23e-04	1.04e-04	1.06e-04	1.08e-04	1.08e-04
Th-233	F	7.11e-11	4.07e-11	1.85e-11	1.34e-11	9.43e-12	7.34e-12	8.54e-12
	M	9.46e-11	5.18e-11	2.58e-11	1.93e-11	1.44e-11	1.16e-11	1.31e-11
	S	9.63e-11	5.24e-11	2.63e-11	1.97e-11	1.47e-11	1.19e-11	1.34e-11
Th-234	F	3.02e-08	1.93e-08	7.33e-09	3.36e-09	2.94e-09	1.49e-09	2.06e-09
	M	3.25e-08	1.58e-08	8.55e-09	5.51e-09	4.36e-09	4.00e-09	4.39e-09

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Th-236	S	3.88e-08	1.82e-08	1.03e-08	6.95e-09	5.39e-09	5.24e-09	5.67e-09
	F	2.40e-10	1.38e-10	6.30e-11	4.74e-11	3.06e-11	2.34e-11	2.77e-11
	M	3.52e-10	1.93e-10	9.67e-11	7.34e-11	5.25e-11	4.13e-11	4.73e-11
	S	3.55e-10	1.95e-10	9.76e-11	7.40e-11	5.31e-11	4.17e-11	4.77e-11
Protactinium								
Pa-227	F	2.07e-07	8.64e-08	4.77e-08	3.45e-08	3.10e-08	2.56e-08	2.80e-08
	M	5.04e-07	1.76e-07	1.07e-07	7.94e-08	7.61e-08	6.21e-08	6.72e-08
	S	5.15e-07	1.79e-07	1.09e-07	8.09e-08	7.75e-08	6.34e-08	6.86e-08
Pa-228	F	3.75e-07	2.43e-07	9.05e-08	4.48e-08	2.99e-08	1.98e-08	2.64e-08
	M	3.06e-07	1.42e-07	7.44e-08	4.44e-08	3.52e-08	3.02e-08	3.41e-08
Pa-229	S	3.84e-07	1.90e-07	1.18e-07	7.66e-08	6.16e-08	5.89e-08	6.35e-08
	F	1.01e-08	5.32e-09	1.85e-09	8.66e-10	7.23e-10	4.44e-10	5.87e-10
	M	3.23e-08	8.59e-09	5.27e-09	3.45e-09	2.95e-09	2.63e-09	2.89e-09
Pa-230	S	3.89e-08	1.02e-08	6.41e-09	4.26e-09	3.64e-09	3.29e-09	3.59e-09
	F	7.48e-07	3.79e-07	1.31e-07	5.85e-08	4.49e-08	2.27e-08	3.37e-08
	M	1.45e-06	6.11e-07	3.43e-07	2.18e-07	1.71e-07	1.56e-07	1.72e-07
Pa-231	S	1.98e-06	8.57e-07	4.95e-07	3.20e-07	2.49e-07	2.34e-07	2.56e-07
	F	2.53e-04	2.29e-04	1.47e-04	1.13e-04	9.47e-05	8.66e-05	9.17e-05
	M	9.49e-05	8.27e-05	5.86e-05	4.36e-05	4.09e-05	3.87e-05	4.01e-05
Pa-232	S	1.44e-04	1.36e-04	1.11e-04	9.12e-05	9.10e-05	9.08e-05	9.19e-05
	F	2.28e-09	1.58e-09	8.03e-10	5.77e-10	4.57e-10	3.82e-10	4.23e-10
	M	4.28e-09	2.08e-09	1.17e-09	7.90e-10	6.26e-10	5.62e-10	6.16e-10
Pa-233	S	1.45e-08	1.22e-08	9.07e-09	7.01e-09	6.88e-09	7.07e-09	7.17e-09
	F	1.23e-08	6.77e-09	2.42e-09	1.13e-09	9.39e-10	5.78e-10	7.61e-10
	M	1.31e-08	5.48e-09	2.95e-09	1.88e-09	1.50e-09	1.37e-09	1.51e-09
Pa-234	S	1.53e-08	6.25e-09	3.55e-09	2.36e-09	1.85e-09	1.76e-09	1.92e-09
	F	6.77e-10	3.93e-10	1.75e-10	1.23e-10	8.02e-11	6.93e-11	7.99e-11
	M	1.52e-09	6.46e-10	3.45e-10	2.48e-10	1.92e-10	1.69e-10	1.87e-10
Pa-235	S	1.62e-09	6.71e-10	3.62e-10	2.60e-10	2.03e-10	1.79e-10	1.97e-10
	F	7.44e-11	4.34e-11	2.00e-11	1.50e-11	1.01e-11	7.79e-12	9.12e-12
	M	9.96e-11	5.70e-11	2.80e-11	2.12e-11	1.53e-11	1.20e-11	1.37e-11
Uranium	S	1.00e-10	5.72e-11	2.82e-11	2.13e-11	1.54e-11	1.21e-11	1.38e-11
	F	4.03e-06	1.43e-06	6.60e-07	4.09e-07	3.62e-07	2.48e-07	2.94e-07
	M	5.34e-05	1.56e-05	9.50e-06	6.25e-06	5.22e-06	4.73e-06	5.18e-06

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
U-231	S	6.81e-05	2.03e-05	1.24e-05	8.18e-06	6.79e-06	6.19e-06	6.77e-06
	F	4.11e-10	1.99e-10	9.57e-11	6.80e-11	5.24e-11	3.77e-11	4.41e-11
	M	2.71e-09	8.46e-10	4.97e-10	3.34e-10	2.70e-10	2.45e-10	2.69e-10
U-232	S	3.30e-09	1.04e-09	6.23e-10	4.22e-10	3.46e-10	3.18e-10	3.47e-10
	F	1.29e-05	6.41e-06	3.33e-06	2.72e-06	2.75e-06	1.54e-06	1.80e-06
	M	3.60e-05	2.05e-05	1.16e-05	7.59e-06	6.24e-06	5.24e-06	5.80e-06
U-233	S	2.27e-04	2.14e-04	1.63e-04	1.27e-04	1.26e-04	1.30e-04	1.31e-04
	F	1.78e-06	9.06e-07	5.66e-07	4.26e-07	4.09e-07	3.21e-07	3.47e-07
	M	1.89e-05	8.24e-06	4.96e-06	3.27e-06	2.62e-06	2.44e-06	2.65e-06
U-234	S	6.30e-05	4.86e-05	3.49e-05	2.60e-05	2.45e-05	2.48e-05	2.54e-05
	F	1.74e-06	8.86e-07	5.53e-07	4.14e-07	3.95e-07	3.14e-07	3.39e-07
	M	1.87e-05	8.14e-06	4.89e-06	3.23e-06	2.58e-06	2.40e-06	2.61e-06
U-235	S	6.20e-05	4.77e-05	3.42e-05	2.54e-05	2.39e-05	2.42e-05	2.48e-05
	F	1.58e-06	8.05e-07	5.05e-07	3.78e-07	3.59e-07	2.87e-07	3.10e-07
	M	1.72e-05	7.49e-06	4.50e-06	2.97e-06	2.37e-06	2.21e-06	2.40e-06
U-235m	S	5.70e-05	4.38e-05	3.14e-05	2.34e-05	2.19e-05	2.22e-05	2.27e-05
	F	1.14e-15	7.13e-16	3.57e-16	2.08e-16	1.40e-16	1.25e-16	1.44e-16
	M	1.09e-15	7.09e-16	3.61e-16	2.10e-16	1.42e-16	1.28e-16	1.47e-16
U-236	S	1.09e-15	7.11e-16	3.63e-16	2.11e-16	1.43e-16	1.29e-16	1.48e-16
	F	1.61e-06	8.22e-07	5.15e-07	3.85e-07	3.66e-07	2.93e-07	3.16e-07
	M	1.76e-05	7.64e-06	4.60e-06	3.03e-06	2.42e-06	2.25e-06	2.45e-06
U-237	S	5.82e-05	4.47e-05	3.20e-05	2.38e-05	2.23e-05	2.26e-05	2.32e-05
	F	8.88e-10	4.24e-10	2.01e-10	1.35e-10	1.07e-10	8.28e-11	9.52e-11
	M	6.60e-09	2.05e-09	1.21e-09	8.11e-10	6.67e-10	6.08e-10	6.66e-10
U-238	S	8.04e-09	2.48e-09	1.47e-09	9.86e-10	8.10e-10	7.43e-10	8.12e-10
	F	1.52e-06	7.72e-07	4.84e-07	3.64e-07	3.51e-07	2.76e-07	2.98e-07
	M	1.63e-05	7.11e-06	4.27e-06	2.81e-06	2.25e-06	2.09e-06	2.27e-06
U-239	S	5.45e-05	4.20e-05	3.02e-05	2.25e-05	2.11e-05	2.14e-05	2.19e-05
	F	9.05e-11	5.09e-11	2.48e-11	1.84e-11	1.35e-11	1.07e-11	1.22e-11
	M	1.21e-10	6.00e-11	3.06e-11	2.27e-11	1.72e-11	1.40e-11	1.58e-11
U-240	S	1.26e-10	6.15e-11	3.16e-11	2.34e-11	1.78e-11	1.45e-11	1.63e-11
	F	1.44e-09	7.72e-10	3.51e-10	2.57e-10	1.69e-10	1.27e-10	1.51e-10
	M	2.89e-09	1.25e-09	6.46e-10	4.61e-10	3.36e-10	2.89e-10	3.25e-10
U-242	S	3.15e-09	1.34e-09	7.00e-10	4.98e-10	3.66e-10	3.19e-10	3.57e-10
	F	1.63e-10	9.46e-11	4.58e-11	3.47e-11	2.40e-11	1.87e-11	2.16e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
	M	1.74e-10	1.00e-10	4.92e-11	3.74e-11	2.62e-11	2.05e-11	2.36e-11
	S	1.74e-10	1.01e-10	4.94e-11	3.76e-11	2.63e-11	2.06e-11	2.37e-11
Neptunium								
Np-232	F	3.04e-11	1.62e-11	8.29e-12	6.38e-12	4.99e-12	4.07e-12	4.53e-12
	M	4.21e-11	2.28e-11	1.23e-11	8.73e-12	6.76e-12	5.96e-12	6.56e-12
Np-233	S	1.19e-10	1.01e-10	7.37e-11	5.71e-11	5.54e-11	5.66e-11	5.75e-11
	F	4.99e-12	2.59e-12	1.28e-12	9.46e-13	6.82e-13	6.20e-13	6.86e-13
Np-234	M	6.59e-12	3.23e-12	1.69e-12	1.25e-12	9.60e-13	8.65e-13	9.48e-13
	S	6.65e-12	3.25e-12	1.71e-12	1.26e-12	9.69e-13	8.74e-13	9.57e-13
Np-235	F	1.57e-09	9.74e-10	4.54e-10	3.00e-10	2.00e-10	1.91e-10	2.14e-10
	M	2.02e-09	1.20e-09	6.32e-10	4.43e-10	3.01e-10	3.16e-10	3.42e-10
Np-236	S	2.20e-09	1.29e-09	6.87e-10	4.84e-10	3.31e-10	3.51e-10	3.78e-10
	F	4.62e-09	2.74e-09	9.70e-10	4.84e-10	3.80e-10	2.93e-10	3.58e-10
Np-237	M	2.60e-09	1.67e-09	7.85e-10	4.54e-10	3.52e-10	3.07e-10	3.47e-10
	S	3.15e-09	2.28e-09	1.31e-09	8.34e-10	6.18e-10	5.89e-10	6.43e-10
Np-238	F	6.53e-06	6.08e-06	3.55e-06	2.83e-06	2.51e-06	2.27e-06	2.39e-06
	M	2.65e-06	2.55e-06	1.63e-06	1.26e-06	1.22e-06	1.15e-06	1.19e-06
Np-239m	S	6.94e-06	7.31e-06	6.24e-06	5.26e-06	5.36e-06	5.36e-06	5.40e-06
	F	2.90e-08	2.10e-08	8.61e-09	4.97e-09	3.75e-09	3.25e-09	3.73e-09
Np-240	M	1.78e-08	1.14e-08	5.83e-09	3.58e-09	2.92e-09	2.84e-09	3.07e-09
	S	2.19e-08	1.49e-08	9.69e-09	6.70e-09	5.80e-09	5.80e-09	6.07e-09
Np-241	F	6.65e-05	5.22e-05	2.43e-05	1.63e-05	1.39e-05	1.25e-05	1.36e-05
	M	4.04e-05	2.71e-05	1.47e-05	9.79e-06	8.69e-06	8.17e-06	8.70e-06
Np-242	S	6.53e-05	5.09e-05	3.66e-05	2.74e-05	2.58e-05	2.61e-05	2.67e-05
	F	9.78e-09	7.95e-09	4.30e-09	3.14e-09	2.63e-09	2.35e-09	2.53e-09
Np-243	M	7.18e-09	4.66e-09	2.85e-09	2.04e-09	1.80e-09	1.80e-09	1.88e-09
	S	8.08e-09	5.24e-09	3.55e-09	2.62e-09	2.38e-09	2.39e-09	2.47e-09
Np-244	F	1.12e-09	6.55e-10	2.86e-10	1.74e-10	1.27e-10	9.89e-11	1.17e-10
	M	4.31e-09	1.39e-09	8.05e-10	5.46e-10	4.50e-10	4.04e-10	4.43e-10
Np-245	S	5.04e-09	1.57e-09	9.25e-10	6.30e-10	5.21e-10	4.71e-10	5.15e-10
	F	2.32e-10	1.25e-10	6.09e-11	4.51e-11	3.31e-11	2.74e-11	3.09e-11
Np-246	M	3.58e-10	1.72e-10	9.11e-11	6.80e-11	5.47e-11	4.51e-11	5.00e-11
	S	3.64e-10	1.74e-10	9.25e-11	6.90e-11	5.57e-11	4.60e-11	5.10e-11
Np-247	F	5.39e-11	3.14e-11	1.55e-11	1.17e-11	8.63e-12	7.13e-12	8.01e-12
	M	6.21e-11	3.53e-11	1.76e-11	1.33e-11	1.00e-11	8.16e-12	9.17e-12

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Plutonium	S	6.27e-11	3.58e-11	1.81e-11	1.37e-11	1.04e-11	8.57e-12	9.58e-12
	F	1.48e-07	5.37e-08	3.27e-08	2.43e-08	2.35e-08	1.91e-08	2.06e-08
	M	1.49e-07	5.42e-08	3.30e-08	2.46e-08	2.37e-08	1.92e-08	2.08e-08
Pu-232	S	1.50e-07	5.45e-08	3.32e-08	2.47e-08	2.38e-08	1.94e-08	2.10e-08
	F	6.19e-08	1.49e-08	9.64e-09	6.63e-09	6.03e-09	5.21e-09	5.68e-09
	M	7.70e-08	1.87e-08	1.21e-08	8.26e-09	7.42e-09	6.47e-09	7.06e-09
Pu-234	S	8.14e-08	2.00e-08	1.28e-08	8.76e-09	7.84e-09	6.86e-09	7.48e-09
	F	6.06e-12	2.61e-12	1.39e-12	1.01e-12	7.89e-13	7.17e-13	7.84e-13
	M	6.09e-12	2.62e-12	1.41e-12	1.02e-12	7.97e-13	7.24e-13	7.92e-13
Pu-235	S	6.12e-12	2.65e-12	1.43e-12	1.03e-12	8.09e-13	7.37e-13	8.05e-13
	F	3.70e-05	2.61e-05	1.34e-05	8.00e-06	7.11e-06	7.52e-06	7.90e-06
	M	3.94e-05	2.42e-05	1.30e-05	8.00e-06	6.69e-06	6.97e-06	7.39e-06
Pu-236	S	5.14e-05	3.43e-05	2.25e-05	1.55e-05	1.35e-05	1.35e-05	1.41e-05
	F	1.51e-09	7.28e-10	3.29e-10	1.92e-10	1.56e-10	1.60e-10	1.74e-10
	M	1.96e-09	9.83e-10	5.17e-10	3.33e-10	2.52e-10	2.48e-10	2.70e-10
Pu-237	S	2.19e-09	1.14e-09	6.29e-10	4.15e-10	3.07e-10	3.00e-10	3.27e-10
	F	7.28e-05	6.15e-05	4.22e-05	3.13e-05	3.10e-05	3.32e-05	3.35e-05
	M	6.34e-05	4.90e-05	3.28e-05	2.39e-05	2.29e-05	2.49e-05	2.52e-05
Pu-238	S	7.49e-05	5.91e-05	4.28e-05	3.22e-05	3.06e-05	3.11e-05	3.18e-05
	F	7.57e-05	6.49e-05	4.64e-05	3.51e-05	3.48e-05	3.68e-05	3.72e-05
	M	6.42e-05	5.07e-05	3.52e-05	2.62e-05	2.52e-05	2.71e-05	2.74e-05
Pu-239	S	7.54e-05	6.07e-05	4.48e-05	3.41e-05	3.25e-05	3.29e-05	3.36e-05
	F	7.57e-05	6.49e-05	4.64e-05	3.51e-05	3.48e-05	3.67e-05	3.71e-05
	M	6.43e-05	5.07e-05	3.52e-05	2.62e-05	2.52e-05	2.71e-05	2.74e-05
Pu-240	S	7.54e-05	6.07e-05	4.48e-05	3.41e-05	3.26e-05	3.29e-05	3.36e-05
	F	5.97e-07	5.75e-07	4.84e-07	3.91e-07	3.96e-07	3.99e-07	4.03e-07
	M	3.57e-07	3.63e-07	2.95e-07	2.37e-07	2.38e-07	2.51e-07	2.52e-07
Pu-241	S	5.39e-07	5.77e-07	5.04e-07	4.32e-07	4.46e-07	4.50e-07	4.51e-07
	F	7.20e-05	6.17e-05	4.42e-05	3.34e-05	3.32e-05	3.50e-05	3.53e-05
	M	6.12e-05	4.82e-05	3.34e-05	2.49e-05	2.40e-05	2.58e-05	2.61e-05
Pu-242	S	7.17e-05	5.75e-05	4.24e-05	3.23e-05	3.08e-05	3.11e-05	3.18e-05
	F	4.06e-10	1.66e-10	9.03e-11	6.52e-11	5.43e-11	4.51e-11	4.99e-11
	M	4.27e-10	1.71e-10	9.33e-11	6.73e-11	5.61e-11	4.68e-11	5.17e-11
Pu-243	S	4.34e-10	1.73e-10	9.56e-11	6.91e-11	5.78e-11	4.85e-11	5.35e-11

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Pu-244	F	7.11e-05	6.09e-05	4.37e-05	3.31e-05	3.30e-05	3.47e-05	3.50e-05
	M	5.99e-05	4.73e-05	3.29e-05	2.46e-05	2.37e-05	2.54e-05	2.57e-05
	S	6.99e-05	5.63e-05	4.16e-05	3.17e-05	3.02e-05	3.06e-05	3.12e-05
Pu-245	F	1.92e-09	8.21e-10	4.24e-10	3.01e-10	2.28e-10	1.97e-10	2.20e-10
	M	2.13e-09	8.75e-10	4.59e-10	3.25e-10	2.49e-10	2.16e-10	2.41e-10
	S	2.19e-09	8.92e-10	4.71e-10	3.34e-10	2.56e-10	2.23e-10	2.48e-10
Pu-246	F	1.18e-08	6.00e-09	2.98e-09	1.88e-09	1.48e-09	1.39e-09	1.53e-09
	M	1.94e-08	8.51e-09	4.70e-09	3.14e-09	2.42e-09	2.35e-09	2.55e-09
	S	2.20e-08	9.48e-09	5.40e-09	3.67e-09	2.84e-09	2.77e-09	3.00e-09
Americium								
Am-237	F	1.32e-10	5.27e-11	2.99e-11	2.19e-11	1.90e-11	1.61e-11	1.76e-11
	M	1.34e-10	5.35e-11	3.05e-11	2.24e-11	1.93e-11	1.64e-11	1.79e-11
	S	1.35e-10	5.38e-11	3.07e-11	2.25e-11	1.95e-11	1.65e-11	1.80e-11
Am-238	F	2.44e-10	1.84e-10	1.17e-10	8.64e-11	7.92e-11	8.02e-11	8.27e-11
	M	2.19e-10	1.54e-10	9.52e-11	6.95e-11	6.11e-11	6.26e-11	6.49e-11
	S	2.34e-10	1.67e-10	1.12e-10	8.37e-11	7.50e-11	7.57e-11	7.82e-11
Am-239	F	1.06e-09	3.75e-10	2.11e-10	1.48e-10	1.22e-10	1.07e-10	1.18e-10
	M	1.21e-09	4.09e-10	2.34e-10	1.64e-10	1.36e-10	1.19e-10	1.31e-10
	S	1.25e-09	4.18e-10	2.40e-10	1.69e-10	1.39e-10	1.23e-10	1.35e-10
Am-240	F	1.62e-09	8.97e-10	4.78e-10	3.37e-10	2.41e-10	2.40e-10	2.60e-10
	M	2.03e-09	1.02e-09	5.49e-10	3.88e-10	2.77e-10	2.76e-10	3.00e-10
	S	2.14e-09	1.06e-09	5.78e-10	4.09e-10	2.95e-10	2.93e-10	3.18e-10
Am-241	F	6.44e-05	5.25e-05	3.29e-05	2.29e-05	2.15e-05	2.07e-05	2.16e-05
	M	5.70e-05	4.19e-05	2.56e-05	1.75e-05	1.56e-05	1.54e-05	1.61e-05
	S	7.57e-05	6.00e-05	4.33e-05	3.25e-05	3.08e-05	3.12e-05	3.19e-05
Am-242	F	5.03e-08	2.75e-08	1.12e-08	6.02e-09	5.27e-09	4.10e-09	4.78e-09
	M	7.51e-08	3.48e-08	1.82e-08	1.13e-08	9.16e-09	8.18e-09	9.06e-09
	S	9.18e-08	4.38e-08	2.61e-08	1.71e-08	1.34e-08	1.27e-08	1.38e-08
Am-242m	F	5.04e-05	4.59e-05	3.08e-05	2.22e-05	2.10e-05	2.03e-05	2.10e-05
	M	3.55e-05	3.29e-05	2.13e-05	1.51e-05	1.38e-05	1.37e-05	1.42e-05
	S	4.81e-05	4.72e-05	3.60e-05	2.79e-05	2.73e-05	2.78e-05	2.82e-05
Am-243	F	6.31e-05	5.15e-05	3.26e-05	2.28e-05	2.14e-05	2.05e-05	2.14e-05
	M	5.56e-05	4.09e-05	2.52e-05	1.72e-05	1.54e-05	1.52e-05	1.59e-05
	S	7.40e-05	5.87e-05	4.26e-05	3.20e-05	3.03e-05	3.06e-05	3.13e-05
Am-244	F	5.11e-09	3.30e-09	1.82e-09	1.19e-09	1.05e-09	1.00e-09	1.06e-09

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Am-244m	M	5.18e-09	2.97e-09	1.66e-09	1.09e-09	9.22e-10	8.91e-10	9.52e-10
	S	6.14e-09	3.80e-09	2.48e-09	1.75e-09	1.56e-09	1.56e-09	1.62e-09
	F	2.56e-10	1.76e-10	9.33e-11	6.34e-11	5.29e-11	4.85e-11	5.23e-11
	M	2.52e-10	1.60e-10	8.55e-11	5.85e-11	4.68e-11	4.29e-11	4.66e-11
Am-245	S	2.90e-10	1.95e-10	1.20e-10	8.65e-11	7.41e-11	7.15e-11	7.53e-11
	F	2.94e-10	1.43e-10	7.39e-11	5.49e-11	4.40e-11	3.53e-11	3.95e-11
	M	3.00e-10	1.44e-10	7.48e-11	5.56e-11	4.46e-11	3.58e-11	4.00e-11
	S	3.02e-10	1.45e-10	7.56e-11	5.62e-11	4.53e-11	3.64e-11	4.07e-11
Am-246	F	3.51e-10	1.75e-10	9.29e-11	6.98e-11	5.76e-11	4.67e-11	5.17e-11
	M	3.53e-10	1.76e-10	9.34e-11	7.01e-11	5.79e-11	4.70e-11	5.20e-11
	S	3.54e-10	1.76e-10	9.38e-11	7.05e-11	5.83e-11	4.73e-11	5.23e-11
	F	1.22e-10	6.87e-11	3.43e-11	2.59e-11	1.87e-11	1.52e-11	1.72e-11
Am-246m	M	1.22e-10	6.88e-11	3.44e-11	2.59e-11	1.87e-11	1.53e-11	1.73e-11
	S	1.22e-10	6.90e-11	3.46e-11	2.61e-11	1.89e-11	1.54e-11	1.74e-11
	F	1.36e-10	7.55e-11	3.81e-11	2.88e-11	2.21e-11	1.77e-11	1.99e-11
	M	1.37e-10	7.58e-11	3.83e-11	2.89e-11	2.22e-11	1.77e-11	1.99e-11
Am-247	S	1.37e-10	7.58e-11	3.83e-11	2.89e-11	2.23e-11	1.77e-11	1.99e-11
Curium								
Cm-238	F	1.45e-08	4.22e-09	2.67e-09	1.91e-09	1.80e-09	1.53e-09	1.65e-09
	M	1.51e-08	4.31e-09	2.74e-09	1.96e-09	1.83e-09	1.55e-09	1.68e-09
	S	1.52e-08	4.37e-09	2.78e-09	1.99e-09	1.87e-09	1.59e-09	1.72e-09
Cm-239	F	2.85e-10	1.04e-10	5.75e-11	4.02e-11	3.15e-11	2.86e-11	3.14e-11
	M	3.31e-10	1.15e-10	6.45e-11	4.50e-11	3.55e-11	3.23e-11	3.55e-11
	S	3.43e-10	1.18e-10	6.65e-11	4.64e-11	3.67e-11	3.34e-11	3.67e-11
Cm-240	F	7.27e-06	2.94e-06	1.40e-06	8.29e-07	7.35e-07	6.21e-07	6.96e-07
	M	1.34e-05	4.49e-06	2.58e-06	1.66e-06	1.39e-06	1.26e-06	1.38e-06
	S	1.57e-05	5.33e-06	3.27e-06	2.17e-06	1.81e-06	1.68e-06	1.82e-06
Cm-241	F	8.59e-08	3.80e-08	1.92e-08	1.19e-08	1.07e-08	9.43e-09	1.03e-08
	M	1.50e-07	5.42e-08	3.15e-08	2.05e-08	1.71e-08	1.58e-08	1.72e-08
	S	1.77e-07	6.58e-08	4.10e-08	2.78e-08	2.34e-08	2.22e-08	2.38e-08
Cm-242	F	1.59e-05	8.30e-06	3.45e-06	1.88e-06	1.65e-06	1.30e-06	1.51e-06
	M	2.36e-05	1.05e-05	5.55e-06	3.46e-06	2.82e-06	2.52e-06	2.79e-06
	S	2.86e-05	1.32e-05	7.90e-06	5.17e-06	4.09e-06	3.86e-06	4.19e-06
Cm-243	F	5.74e-05	4.54e-05	2.61e-05	1.72e-05	1.58e-05	1.54e-05	1.62e-05
	M	5.39e-05	3.81e-05	2.19e-05	1.44e-05	1.25e-05	1.24e-05	1.31e-05

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Cm-244	S	6.97e-05	5.27e-05	3.64e-05	2.63e-05	2.43e-05	2.48e-05	2.55e-05
	F	5.32e-05	4.13e-05	2.28e-05	1.46e-05	1.32e-05	1.29e-05	1.36e-05
	M	5.13e-05	3.55e-05	1.99e-05	1.28e-05	1.09e-05	1.08e-05	1.15e-05
Cm-245	S	6.56e-05	4.83e-05	3.26e-05	2.31e-05	2.09e-05	2.13e-05	2.20e-05
	F	6.44e-05	5.27e-05	3.34e-05	2.35e-05	2.20e-05	2.11e-05	2.20e-05
	M	5.66e-05	4.18e-05	2.58e-05	1.77e-05	1.58e-05	1.56e-05	1.63e-05
Cm-246	S	7.55e-05	6.01e-05	4.37e-05	3.29e-05	3.12e-05	3.15e-05	3.22e-05
	F	6.47e-05	5.28e-05	3.34e-05	2.33e-05	2.19e-05	2.10e-05	2.19e-05
	M	5.69e-05	4.19e-05	2.58e-05	1.76e-05	1.57e-05	1.55e-05	1.62e-05
Cm-247	S	7.57e-05	6.01e-05	4.36e-05	3.28e-05	3.11e-05	3.14e-05	3.21e-05
	F	5.94e-05	4.83e-05	3.07e-05	2.15e-05	2.02e-05	1.94e-05	2.02e-05
	M	5.24e-05	3.84e-05	2.37e-05	1.62e-05	1.45e-05	1.43e-05	1.50e-05
Cm-248	S	6.96e-05	5.50e-05	3.98e-05	2.99e-05	2.83e-05	2.86e-05	2.93e-05
	F	2.36e-04	1.95e-04	1.27e-04	8.99e-05	8.54e-05	8.15e-05	8.47e-05
	M	1.80e-04	1.43e-04	8.93e-05	6.15e-05	5.54e-05	5.47e-05	5.71e-05
Cm-249	S	2.23e-04	1.92e-04	1.41e-04	1.06e-04	1.02e-04	1.03e-04	1.05e-04
	F	1.73e-10	9.53e-11	5.08e-11	3.81e-11	3.12e-11	2.59e-11	2.85e-11
	M	1.71e-10	9.24e-11	4.84e-11	3.62e-11	2.91e-11	2.40e-11	2.66e-11
Cm-250	S	1.78e-10	1.00e-10	5.51e-11	4.17e-11	3.47e-11	2.96e-11	3.22e-11
	F	1.60e-03	1.32e-03	8.68e-04	6.19e-04	5.89e-04	5.61e-04	5.83e-04
	M	1.17e-03	9.52e-04	5.95e-04	4.11e-04	3.71e-04	3.67e-04	3.82e-04
Cm-251	S	1.40e-03	1.25e-03	9.21e-04	6.96e-04	6.67e-04	6.78e-04	6.91e-04
	F	1.30e-10	6.98e-11	3.55e-11	2.66e-11	2.05e-11	1.64e-11	1.85e-11
	M	1.31e-10	6.99e-11	3.55e-11	2.66e-11	2.04e-11	1.64e-11	1.84e-11
	S	1.32e-10	7.09e-11	3.63e-11	2.73e-11	2.11e-11	1.71e-11	1.92e-11
Berkelium								
Bk-245	F	6.47e-09	2.07e-09	1.18e-09	7.75e-10	6.56e-10	5.80e-10	6.38e-10
	M	1.12e-08	3.20e-09	1.94e-09	1.30e-09	1.09e-09	9.91e-10	1.08e-09
	S	1.26e-08	3.55e-09	2.19e-09	1.48e-09	1.24e-09	1.13e-09	1.23e-09
Bk-246	F	1.10e-09	6.59e-10	3.40e-10	2.42e-10	1.66e-10	1.65e-10	1.80e-10
	M	1.27e-09	7.14e-10	3.73e-10	2.64e-10	1.81e-10	1.82e-10	1.99e-10
	S	1.33e-09	7.51e-10	4.03e-10	2.87e-10	2.02e-10	2.05e-10	2.22e-10
Bk-247	F	5.56e-05	4.50e-05	2.89e-05	2.09e-05	2.06e-05	1.96e-05	2.03e-05
	M	5.15e-05	3.68e-05	2.28e-05	1.60e-05	1.48e-05	1.46e-05	1.52e-05
	S	7.72e-05	6.13e-05	4.45e-05	3.35e-05	3.18e-05	3.21e-05	3.28e-05

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Bk-248m	F	4.28e-08	2.72e-08	1.19e-08	6.39e-09	5.60e-09	4.38e-09	5.05e-09
	M	5.75e-08	3.11e-08	1.61e-08	9.76e-09	7.94e-09	7.00e-09	7.78e-09
	S	7.41e-08	4.21e-08	2.57e-08	1.69e-08	1.35e-08	1.30e-08	1.40e-08
Bk-249	F	9.68e-08	8.79e-08	6.03e-08	4.51e-08	4.50e-08	4.41e-08	4.51e-08
	M	6.94e-08	6.28e-08	4.08e-08	2.98e-08	2.86e-08	2.90e-08	2.97e-08
	S	1.23e-07	1.19e-07	9.13e-08	7.12e-08	7.02e-08	7.18e-08	7.27e-08
Bk-250	F	1.68e-09	1.15e-09	6.16e-10	4.00e-10	3.56e-10	3.31e-10	3.54e-10
	M	1.76e-09	1.08e-09	5.89e-10	3.86e-10	3.23e-10	3.04e-10	3.27e-10
	S	2.30e-09	1.55e-09	9.95e-10	6.97e-10	6.09e-10	6.07e-10	6.34e-10
Bk-251	F	2.08e-10	1.06e-10	5.56e-11	4.15e-11	3.37e-11	2.74e-11	3.04e-11
	M	2.10e-10	1.06e-10	5.53e-11	4.13e-11	3.33e-11	2.70e-11	3.00e-11
	S	2.13e-10	1.09e-10	5.81e-11	4.35e-11	3.55e-11	2.93e-11	3.24e-11
Californium								
Cf-244	F	7.38e-08	2.92e-08	1.69e-08	1.25e-08	1.17e-08	9.57e-09	1.04e-08
	M	7.68e-08	2.97e-08	1.74e-08	1.28e-08	1.20e-08	9.85e-09	1.07e-08
	S	7.84e-08	3.05e-08	1.79e-08	1.32e-08	1.23e-08	1.02e-08	1.10e-08
Cf-246	F	2.51e-06	6.67e-07	4.01e-07	2.66e-07	2.37e-07	2.05e-07	2.25e-07
	M	3.58e-06	9.00e-07	5.66e-07	3.80e-07	3.34e-07	2.95e-07	3.23e-07
	S	3.89e-06	9.81e-07	6.26e-07	4.22e-07	3.69e-07	3.28e-07	3.58e-07
Cf-247	F	2.10e-10	7.33e-11	4.40e-11	3.13e-11	2.79e-11	2.44e-11	2.64e-11
	M	2.18e-10	7.31e-11	4.38e-11	3.09e-11	2.72e-11	2.39e-11	2.59e-11
	S	2.27e-10	8.00e-11	4.97e-11	3.57e-11	3.18e-11	2.86e-11	3.07e-11
Cf-248	F	2.19e-05	1.33e-05	5.88e-06	3.18e-06	2.80e-06	2.19e-06	2.52e-06
	M	2.96e-05	1.53e-05	7.99e-06	4.86e-06	3.98e-06	3.50e-06	3.89e-06
	S	3.77e-05	2.07e-05	1.27e-05	8.33e-06	6.68e-06	6.44e-06	6.92e-06
Cf-249	F	5.44e-05	4.39e-05	2.79e-05	2.00e-05	1.97e-05	1.89e-05	1.95e-05
	M	5.13e-05	3.63e-05	2.23e-05	1.55e-05	1.44e-05	1.42e-05	1.48e-05
	S	7.88e-05	6.24e-05	4.52e-05	3.40e-05	3.22e-05	3.26e-05	3.33e-05
Cf-250	F	4.34e-05	3.30e-05	1.78e-05	1.12e-05	1.04e-05	9.84e-06	1.04e-05
	M	4.59e-05	3.03e-05	1.67e-05	1.06e-05	9.19e-06	8.86e-06	9.45e-06
	S	6.50e-05	4.70e-05	3.13e-05	2.17e-05	1.94e-05	1.97e-05	2.04e-05
Cf-251	F	5.47e-05	4.41e-05	2.83e-05	2.03e-05	2.01e-05	1.92e-05	1.99e-05
	M	5.13e-05	3.64e-05	2.24e-05	1.57e-05	1.45e-05	1.43e-05	1.49e-05
	S	7.90e-05	6.28e-05	4.55e-05	3.43e-05	3.25e-05	3.29e-05	3.36e-05
Cf-252	F	5.46e-05	3.71e-05	1.71e-05	9.45e-06	8.16e-06	6.71e-06	7.60e-06

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Cf-253	M	5.92e-05	3.64e-05	1.85e-05	1.10e-05	8.90e-06	7.85e-06	8.73e-06
	S	7.40e-05	4.85e-05	2.98e-05	1.91e-05	1.52e-05	1.48e-05	1.59e-05
	F	1.98e-06	1.01e-06	3.82e-07	1.78e-07	1.66e-07	1.07e-07	1.34e-07
	M	3.87e-06	1.68e-06	9.03e-07	5.61e-07	4.48e-07	4.02e-07	4.46e-07
Cf-254	S	4.80e-06	2.06e-06	1.19e-06	7.70e-07	5.99e-07	5.61e-07	6.14e-07
	F	2.03e-04	8.98e-05	3.73e-05	1.91e-05	1.76e-05	1.22e-05	1.47e-05
	M	2.75e-04	1.19e-04	6.26e-05	3.76e-05	2.98e-05	2.59e-05	2.91e-05
	S	3.10e-04	1.39e-04	7.89e-05	4.92e-05	3.72e-05	3.44e-05	3.81e-05
Cf-255	F	9.28e-09	3.97e-09	1.72e-09	8.89e-10	8.07e-10	5.80e-10	6.92e-10
	M	1.98e-08	7.09e-09	4.01e-09	2.54e-09	2.08e-09	1.86e-09	2.06e-09
	S	2.39e-08	8.59e-09	5.09e-09	3.32e-09	2.67e-09	2.46e-09	2.69e-09
Einsteinium								
Es-249	F	1.67e-09	5.41e-10	3.34e-10	2.42e-10	2.27e-10	1.91e-10	2.07e-10
	M	1.71e-09	5.47e-10	3.37e-10	2.45e-10	2.29e-10	1.92e-10	2.08e-10
	S	1.73e-09	5.64e-10	3.52e-10	2.56e-10	2.40e-10	2.03e-10	2.19e-10
Es-250	F	4.76e-09	3.04e-09	1.64e-09	1.06e-09	9.47e-10	8.88e-10	9.48e-10
	M	5.09e-09	2.88e-09	1.59e-09	1.04e-09	8.75e-10	8.31e-10	8.93e-10
	S	6.54e-09	4.13e-09	2.67e-09	1.86e-09	1.63e-09	1.63e-09	1.70e-09
Es-250m	F	8.98e-10	6.71e-10	3.61e-10	2.29e-10	2.09e-10	1.98e-10	2.10e-10
	M	9.45e-10	6.19e-10	3.41e-10	2.18e-10	1.86e-10	1.79e-10	1.91e-10
	S	1.32e-09	9.43e-10	6.21e-10	4.33e-10	3.83e-10	3.89e-10	4.04e-10
Es-251	F	1.18e-08	3.09e-09	1.93e-09	1.31e-09	1.17e-09	1.02e-09	1.11e-09
	M	1.65e-08	4.05e-09	2.58e-09	1.75e-09	1.54e-09	1.37e-09	1.49e-09
	S	1.78e-08	4.41e-09	2.86e-09	1.95e-09	1.72e-09	1.54e-09	1.67e-09
Es-253	F	5.69e-06	1.89e-06	9.56e-07	5.57e-07	5.04e-07	4.02e-07	4.57e-07
	M	1.17e-05	3.47e-06	2.06e-06	1.34e-06	1.13e-06	1.01e-06	1.11e-06
	S	1.36e-05	4.03e-06	2.46e-06	1.62e-06	1.35e-06	1.23e-06	1.35e-06
Es-254	F	2.06e-05	1.22e-05	5.42e-06	2.86e-06	2.56e-06	1.97e-06	2.28e-06
	M	2.86e-05	1.45e-05	7.59e-06	4.60e-06	3.78e-06	3.32e-06	3.69e-06
	S	3.66e-05	1.96e-05	1.20e-05	7.88e-06	6.32e-06	6.07e-06	6.53e-06
Es-254m	F	2.27e-06	5.73e-07	3.53e-07	2.32e-07	2.04e-07	1.79e-07	1.97e-07
	M	3.49e-06	8.33e-07	5.31e-07	3.54e-07	3.09e-07	2.76e-07	3.02e-07
	S	3.81e-06	9.07e-07	5.84e-07	3.91e-07	3.41e-07	3.05e-07	3.33e-07
Es-255	F	6.32e-06	2.68e-06	1.16e-06	5.92e-07	5.43e-07	3.87e-07	4.63e-07
	M	1.34e-05	4.77e-06	2.70e-06	1.70e-06	1.40e-06	1.25e-06	1.38e-06

Table A-2. Committed effective dose coefficients for inhalation of particles (continued)

Nuclide	Type	Dose Coefficient (Sv/Bq)						
		Newborn	1-year	5-year	10-year	15-year	Adult	Per Capita
Es-256	S	1.61e-05	5.77e-06	3.43e-06	2.23e-06	1.79e-06	1.66e-06	1.82e-06
	F	6.38e-07	1.45e-07	9.27e-08	6.09e-08	5.27e-08	4.68e-08	5.15e-08
	M	6.71e-07	1.51e-07	9.72e-08	6.40e-08	5.53e-08	4.92e-08	5.41e-08
	S	6.79e-07	1.53e-07	9.84e-08	6.47e-08	5.60e-08	4.98e-08	5.47e-08
Fermium								
Fm-251	F	1.44e-08	3.99e-09	2.49e-09	1.74e-09	1.60e-09	1.36e-09	1.48e-09
	M	1.63e-08	4.38e-09	2.76e-09	1.93e-09	1.76e-09	1.51e-09	1.64e-09
	S	1.68e-08	4.50e-09	2.84e-09	1.99e-09	1.81e-09	1.56e-09	1.70e-09
Fm-252	F	2.13e-06	5.71e-07	3.49e-07	2.34e-07	2.10e-07	1.81e-07	1.98e-07
	M	2.82e-06	7.19e-07	4.53e-07	3.06e-07	2.71e-07	2.38e-07	2.60e-07
	S	3.02e-06	7.73e-07	4.93e-07	3.34e-07	2.95e-07	2.61e-07	2.84e-07
Fm-253	F	7.79e-07	2.69e-07	1.32e-07	7.58e-08	6.89e-08	5.41e-08	6.19e-08
	M	1.61e-06	4.91e-07	2.90e-07	1.88e-07	1.58e-07	1.41e-07	1.55e-07
	S	1.89e-06	5.72e-07	3.48e-07	2.29e-07	1.90e-07	1.73e-07	1.89e-07
Fm-254	F	5.05e-07	1.55e-07	9.54e-08	6.84e-08	6.37e-08	5.34e-08	5.80e-08
	M	5.30e-07	1.60e-07	9.91e-08	7.10e-08	6.61e-08	5.55e-08	6.02e-08
	S	5.36e-07	1.62e-07	1.01e-07	7.20e-08	6.70e-08	5.63e-08	6.11e-08
Fm-255	F	1.81e-06	4.68e-07	2.93e-07	2.00e-07	1.79e-07	1.55e-07	1.69e-07
	M	2.30e-06	5.71e-07	3.63e-07	2.48e-07	2.22e-07	1.94e-07	2.12e-07
	S	2.43e-06	5.98e-07	3.82e-07	2.61e-07	2.32e-07	2.03e-07	2.22e-07
Fm-256	F	4.02e-06	9.10e-07	5.83e-07	3.84e-07	3.32e-07	2.95e-07	3.24e-07
	M	4.19e-06	9.45e-07	6.08e-07	4.00e-07	3.46e-07	3.08e-07	3.38e-07
	S	4.24e-06	9.54e-07	6.14e-07	4.04e-07	3.50e-07	3.11e-07	3.42e-07
Fm-257	F	1.99e-05	1.04e-05	4.27e-06	2.08e-06	1.89e-06	1.28e-06	1.56e-06
	M	2.98e-05	1.40e-05	7.35e-06	4.46e-06	3.62e-06	3.15e-06	3.52e-06
	S	3.73e-05	1.81e-05	1.07e-05	6.94e-06	5.40e-06	5.09e-06	5.55e-06

Table A-3. Committed effective dose coefficients for inhalation of gas or vapor

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Tritiated water vapor							
H-3 (inhalation)	1.33e-10	7.28e-11	3.69e-11	2.75e-11	2.07e-11	1.97e-11	2.14e-11
H-3 (inhalation + skin absorption) ^(a)	2.00e-10	1.09e-10	5.54e-11	4.13e-11	3.11e-11	2.96e-11	3.21e-11
Elemental Tritium							
H-3	1.33e-14	7.28e-15	3.69e-15	2.75e-15	2.07e-15	1.97e-15	2.14e-15
Hydrogen (other forms)							
H-3	1.33e-10	7.29e-11	3.69e-11	2.75e-11	2.07e-11	1.97e-11	2.14e-11
Carbon monoxide							
C-11	2.24e-11	1.15e-11	5.85e-12	3.99e-12	2.60e-12	2.44e-12	2.75e-12
C-14	2.22e-11	1.20e-11	5.82e-12	3.48e-12	2.13e-12	1.84e-12	2.19e-12
Carbon dioxide							
C-11	3.41e-11	1.77e-11	9.17e-12	6.12e-12	3.96e-12	3.64e-12	4.13e-12
C-14	5.49e-11	4.53e-11	2.12e-11	1.35e-11	1.48e-11	1.29e-11	1.36e-11
Carbon (other forms)							
C-11	1.67e-10	8.76e-11	5.22e-11	3.76e-11	2.72e-11	2.56e-11	2.79e-11
C-14	7.01e-10	4.96e-10	2.63e-10	1.89e-10	1.68e-10	1.70e-10	1.77e-10
Inorganic sulfur							
S-35	4.72e-10	2.07e-10	1.08e-10	6.99e-11	4.88e-11	5.46e-11	5.88e-11
S-38	2.25e-09	1.24e-09	7.24e-10	5.00e-10	3.41e-10	3.20e-10	3.54e-10
Organic sulfur							
S-35	1.16e-08	6.98e-09	3.64e-09	2.19e-09	1.34e-09	1.18e-09	1.38e-09
S-38	2.29e-09	1.25e-09	7.22e-10	5.04e-10	3.42e-10	3.24e-10	3.58e-10
Nickel							
Ni-56	6.52e-09	4.03e-09	2.41e-09	1.66e-09	1.18e-09	1.21e-09	1.30e-09
Ni-57	9.37e-09	4.96e-09	2.98e-09	2.14e-09	1.58e-09	1.58e-09	1.69e-09
Ni-59	1.72e-09	1.33e-09	8.83e-10	5.99e-10	4.33e-10	3.91e-10	4.29e-10
Ni-63	9.79e-09	7.40e-09	5.63e-09	4.50e-09	3.83e-09	3.55e-09	3.72e-09
Ni-65	2.65e-09	1.30e-09	7.75e-10	5.60e-10	4.18e-10	4.11e-10	4.42e-10
Ni-66	3.58e-08	1.68e-08	9.88e-09	7.05e-09	5.22e-09	5.08e-09	5.50e-09

Table A-3. Committed effective dose coefficients for inhalation of gas or vapor (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Ruthenium tetroxide							
Ru-94	6.38e-10	3.50e-10	2.05e-10	1.51e-10	1.07e-10	9.11e-11	1.02e-10
Ru-95	3.18e-10	2.03e-10	1.19e-10	8.66e-11	6.17e-11	5.85e-11	6.37e-11
Ru-97	6.96e-10	4.33e-10	2.43e-10	1.77e-10	1.23e-10	1.15e-10	1.26e-10
Ru-103	1.34e-08	4.53e-09	2.75e-09	1.98e-09	1.48e-09	1.39e-09	1.52e-09
Ru-105	2.45e-09	1.24e-09	7.52e-10	5.54e-10	4.11e-10	3.73e-10	4.08e-10
Ru-106	4.52e-08	2.65e-08	1.54e-08	1.04e-08	7.57e-09	7.03e-09	7.72e-09
Tellurium							
Te-114	3.39e-10	1.77e-10	1.03e-10	7.41e-11	5.18e-11	4.91e-11	5.38e-11
Te-116	8.57e-10	4.64e-10	2.66e-10	1.82e-10	1.27e-10	1.14e-10	1.27e-10
Te-117	2.52e-10	1.35e-10	7.76e-11	5.58e-11	3.88e-11	3.68e-11	4.04e-11
Te-118	1.33e-08	8.51e-09	4.54e-09	2.63e-09	1.81e-09	1.53e-09	1.77e-09
Te-119	7.25e-10	3.97e-10	2.17e-10	1.54e-10	1.07e-10	9.91e-11	1.10e-10
Te-119m	4.01e-09	2.28e-09	1.26e-09	8.76e-10	6.21e-10	5.83e-10	6.42e-10
Te-121	3.22e-09	1.84e-09	1.02e-09	7.03e-10	5.02e-10	4.87e-10	5.32e-10
Te-121m	1.01e-08	5.98e-09	3.06e-09	1.75e-09	1.29e-09	1.09e-09	1.25e-09
Te-123	2.48e-10	1.45e-10	6.70e-11	3.25e-11	2.43e-11	1.57e-11	2.02e-11
Te-123m	8.10e-09	4.80e-09	2.33e-09	1.23e-09	8.86e-10	6.73e-10	8.13e-10
Te-125m	7.02e-09	4.15e-09	1.99e-09	1.02e-09	7.13e-10	5.22e-10	6.46e-10
Te-127	7.51e-10	4.02e-10	2.20e-10	1.41e-10	9.64e-11	8.51e-11	9.67e-11
Te-127m	1.84e-08	1.14e-08	5.38e-09	2.64e-09	1.91e-09	1.26e-09	1.61e-09
Te-129	4.11e-10	2.19e-10	1.29e-10	9.04e-11	6.38e-11	5.81e-11	6.43e-11
Te-129m	2.40e-08	1.52e-08	7.56e-09	3.90e-09	2.75e-09	1.98e-09	2.44e-09
Te-131	5.69e-10	4.18e-10	2.55e-10	1.44e-10	1.01e-10	8.11e-11	9.43e-11
Te-131m	1.38e-08	1.17e-08	7.01e-09	3.54e-09	2.43e-09	1.76e-09	2.15e-09
Te-132	3.18e-08	2.48e-08	1.36e-08	6.91e-09	4.74e-09	3.40e-09	4.19e-09
Te-133	5.06e-10	3.78e-10	2.12e-10	1.12e-10	7.75e-11	6.00e-11	7.17e-11
Te-133m	1.91e-09	1.48e-09	8.20e-10	4.16e-10	2.85e-10	2.11e-10	2.58e-10
Te-134	8.74e-10	5.55e-10	3.18e-10	1.93e-10	1.36e-10	1.13e-10	1.30e-10
Methyl iodide							
I-118	1.78e-10	1.35e-10	7.37e-11	4.14e-11	2.89e-11	2.27e-11	2.68e-11
I-119	9.58e-11	7.19e-11	3.88e-11	2.10e-11	1.44e-11	1.10e-11	1.32e-11
I-120	1.08e-09	9.07e-10	5.18e-10	2.84e-10	2.00e-10	1.46e-10	1.75e-10
I-120m	5.85e-10	4.71e-10	2.66e-10	1.47e-10	1.02e-10	7.59e-11	9.09e-11

Table A-3. Committed effective dose coefficients for inhalation of gas or vapor (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
I-121	2.72e-10	2.21e-10	1.20e-10	6.01e-11	4.14e-11	3.01e-11	3.70e-11
I-123	1.33e-09	1.15e-09	6.11e-10	2.82e-10	1.93e-10	1.32e-10	1.68e-10
I-124	4.34e-08	4.16e-08	2.54e-08	1.25e-08	8.85e-09	6.07e-09	7.49e-09
I-125	2.62e-08	3.07e-08	2.54e-08	1.50e-08	1.16e-08	8.90e-09	1.01e-08
I-126	9.07e-08	9.35e-08	6.20e-08	3.09e-08	2.17e-08	1.50e-08	1.84e-08
I-128	1.57e-10	1.23e-10	6.60e-11	3.39e-11	2.29e-11	1.63e-11	2.02e-11
I-129	9.13e-08	1.15e-07	1.16e-07	8.28e-08	7.23e-08	6.64e-08	6.94e-08
I-130	1.03e-08	8.89e-09	4.82e-09	2.26e-09	1.55e-09	1.07e-09	1.35e-09
I-131	8.70e-08	8.56e-08	5.24e-08	2.49e-08	1.71e-08	1.16e-08	1.45e-08
I-132	1.63e-09	1.35e-09	7.39e-10	3.68e-10	2.52e-10	1.78e-10	2.21e-10
I-132m	2.07e-09	1.70e-09	9.50e-10	4.98e-10	3.48e-10	2.61e-10	3.14e-10
I-133	2.30e-08	2.02e-08	1.10e-08	5.04e-09	3.40e-09	2.25e-09	2.90e-09
I-134	4.74e-10	3.73e-10	2.04e-10	1.07e-10	7.33e-11	5.35e-11	6.53e-11
I-135	5.39e-09	4.60e-09	2.49e-09	1.17e-09	7.95e-10	5.41e-10	6.88e-10
Iodine (other forms)							
I-118	3.72e-10	2.30e-10	1.29e-10	8.39e-11	5.86e-11	5.13e-11	5.79e-11
I-119	2.50e-10	1.84e-10	1.12e-10	7.67e-11	5.58e-11	5.03e-11	5.53e-11
I-120	1.73e-09	1.42e-09	8.25e-10	4.96e-10	3.49e-10	2.70e-10	3.15e-10
I-120m	1.02e-09	7.98e-10	4.68e-10	2.93e-10	2.06e-10	1.68e-10	1.92e-10
I-121	4.20e-10	3.34e-10	1.88e-10	1.03e-10	7.29e-11	5.78e-11	6.78e-11
I-123	1.91e-09	1.65e-09	8.82e-10	4.16e-10	2.86e-10	2.02e-10	2.53e-10
I-124	6.17e-08	5.91e-08	3.61e-08	1.78e-08	1.26e-08	8.66e-09	1.07e-08
I-125	3.73e-08	4.37e-08	3.62e-08	2.14e-08	1.65e-08	1.27e-08	1.43e-08
I-126	1.29e-07	1.33e-07	8.83e-08	4.41e-08	3.10e-08	2.14e-08	2.62e-08
I-128	4.06e-10	3.07e-10	1.86e-10	1.25e-10	9.12e-11	7.94e-11	8.81e-11
I-129	1.30e-07	1.64e-07	1.66e-07	1.18e-07	1.03e-07	9.46e-08	9.89e-08
I-130	1.47e-08	1.26e-08	6.89e-09	3.29e-09	2.27e-09	1.59e-09	1.99e-09
I-131	1.24e-07	1.22e-07	7.47e-08	3.55e-08	2.44e-08	1.65e-08	2.07e-08
I-132	2.48e-09	2.01e-09	1.14e-09	6.18e-10	4.32e-10	3.29e-10	3.92e-10
I-132m	1.37e-09	1.15e-09	6.25e-10	3.03e-10	2.07e-10	1.43e-10	1.80e-10
I-133	3.26e-08	2.86e-08	1.57e-08	7.22e-09	4.88e-09	3.26e-09	4.19e-09
I-134	9.03e-10	6.91e-10	4.08e-10	2.54e-10	1.82e-10	1.54e-10	1.74e-10
I-135	7.71e-09	6.54e-09	3.58e-09	1.73e-09	1.19e-09	8.36e-10	1.04e-09

Table A-3. Committed effective dose coefficients for inhalation of gas or vapor (continued)

Nuclide	Dose Coefficient (Sv/Bq)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Mercury							
Hg-190	6.63e-11	3.36e-11	1.92e-11	1.33e-11	9.34e-12	9.19e-12	1.00e-11
Hg-191m	1.83e-10	9.38e-11	5.35e-11	3.67e-11	2.59e-11	2.52e-11	2.76e-11
Hg-192	6.39e-10	3.36e-10	1.93e-10	1.33e-10	9.39e-11	9.18e-11	1.00e-10
Hg-193	3.74e-10	1.90e-10	1.09e-10	7.46e-11	5.29e-11	5.10e-11	5.59e-11
Hg-193m	1.39e-09	7.22e-10	4.09e-10	2.78e-10	1.96e-10	1.89e-10	2.07e-10
Hg-194	4.55e-08	3.23e-08	2.00e-08	1.34e-08	1.00e-08	1.03e-08	1.10e-08
Hg-195	4.60e-10	2.25e-10	1.29e-10	8.84e-11	6.33e-11	5.98e-11	6.58e-11
Hg-195m	2.76e-09	1.39e-09	7.77e-10	5.16e-10	3.63e-10	3.38e-10	3.76e-10
Hg-197	1.52e-09	7.60e-10	4.23e-10	2.82e-10	1.98e-10	1.83e-10	2.04e-10
Hg-197m	2.05e-09	1.03e-09	5.68e-10	3.76e-10	2.63e-10	2.41e-10	2.69e-10
Hg-199m	1.08e-10	5.12e-11	2.85e-11	1.93e-11	1.37e-11	1.26e-11	1.40e-11
Hg-203	1.37e-08	8.08e-09	4.54e-09	2.86e-09	1.99e-09	1.91e-09	2.12e-09

^(a) Dose from skin absorption assumed to be 50% of dose from inhalation based on paragraph 22 of ICRP Publication 134 (2016)

Table A-4. Effective dose rate coefficients for air submersion

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Hydrogen							
H-3	4.91e-20	4.73e-20	4.48e-20	4.27e-20	3.96e-20	3.80e-20	3.92e-20
Beryllium							
Be-7	2.94e-15	2.76e-15	2.62e-15	2.49e-15	2.28e-15	2.18e-15	2.26e-15
Be-10	6.81e-16	6.62e-16	6.33e-16	6.10e-16	5.76e-16	5.57e-16	5.70e-16
Carbon							
C-10	1.06e-13	1.01e-13	9.55e-14	9.08e-14	8.36e-14	8.00e-14	8.27e-14
C-11	6.14e-14	5.78e-14	5.49e-14	5.21e-14	4.79e-14	4.58e-14	4.74e-14
C-14	4.92e-17	4.76e-17	4.51e-17	4.31e-17	4.02e-17	3.86e-17	3.97e-17
Nitrogen							
N-13	6.19e-14	5.83e-14	5.53e-14	5.26e-14	4.83e-14	4.62e-14	4.78e-14
N-16	3.21e-13	3.15e-13	3.06e-13	2.97e-13	2.86e-13	2.78e-13	2.83e-13
Oxygen							
O-14	2.04e-13	1.96e-13	1.88e-13	1.80e-13	1.69e-13	1.63e-13	1.67e-13
O-15	6.31e-14	5.94e-14	5.64e-14	5.36e-14	4.93e-14	4.72e-14	4.88e-14
O-19	6.55e-14	6.27e-14	5.94e-14	5.69e-14	5.31e-14	5.11e-14	5.25e-14
Fluorine							
F-17	6.31e-14	5.94e-14	5.64e-14	5.36e-14	4.93e-14	4.72e-14	4.88e-14
F-18	5.90e-14	5.55e-14	5.27e-14	5.01e-14	4.60e-14	4.40e-14	4.55e-14
Neon							
Ne-19	6.43e-14	6.06e-14	5.75e-14	5.47e-14	5.03e-14	4.81e-14	4.97e-14
Ne-24	3.52e-14	3.32e-14	3.15e-14	3.00e-14	2.76e-14	2.64e-14	2.73e-14
Sodium							
Na-22	1.31e-13	1.25e-13	1.19e-13	1.13e-13	1.05e-13	1.01e-13	1.04e-13
Na-24	2.54e-13	2.46e-13	2.37e-13	2.28e-13	2.16e-13	2.08e-13	2.13e-13
Magnesium							
Mg-27	5.57e-14	5.36e-14	5.07e-14	4.83e-14	4.47e-14	4.29e-14	4.42e-14
Mg-28	8.15e-14	7.83e-14	7.43e-14	7.09e-14	6.61e-14	6.34e-14	6.53e-14
Aluminum							
Al-26	1.62e-13	1.56e-13	1.49e-13	1.42e-13	1.33e-13	1.28e-13	1.32e-13
Al-28	1.13e-13	1.10e-13	1.05e-13	1.01e-13	9.52e-14	9.17e-14	9.40e-14
Al-29	8.71e-14	8.42e-14	8.01e-14	7.67e-14	7.19e-14	6.91e-14	7.10e-14

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m3)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Silicon							
Si-31	2.21e-15	2.15e-15	2.05e-15	1.98e-15	1.86e-15	1.80e-15	1.84e-15
Si-32	9.30e-17	9.01e-17	8.58e-17	8.22e-17	7.71e-17	7.43e-17	7.63e-17
Phosphorus							
P-30	6.71e-14	6.33e-14	6.02e-14	5.72e-14	5.27e-14	5.05e-14	5.22e-14
P-32	2.64e-15	2.56e-15	2.45e-15	2.36e-15	2.23e-15	2.15e-15	2.20e-15
P-33	1.13e-16	1.09e-16	1.04e-16	9.98e-17	9.37e-17	9.03e-17	9.27e-17
Sulfur							
S-35	4.99e-17	4.83e-17	4.58e-17	4.38e-17	4.09e-17	3.93e-17	4.04e-17
S-37	1.86e-13	1.80e-13	1.74e-13	1.68e-13	1.60e-13	1.55e-13	1.58e-13
S-38	1.05e-13	1.01e-13	9.73e-14	9.36e-14	8.85e-14	8.54e-14	8.74e-14
Chlorine							
Cl-34	7.14e-14	6.75e-14	6.41e-14	6.10e-14	5.63e-14	5.39e-14	5.57e-14
Cl-34m	1.30e-13	1.25e-13	1.19e-13	1.15e-13	1.08e-13	1.04e-13	1.07e-13
Cl-36	7.88e-16	7.66e-16	7.32e-16	7.05e-16	6.66e-16	6.44e-16	6.59e-16
Cl-38	9.62e-14	9.30e-14	8.93e-14	8.58e-14	8.12e-14	7.83e-14	8.02e-14
Cl-39	9.05e-14	8.71e-14	8.27e-14	7.92e-14	7.40e-14	7.12e-14	7.32e-14
Cl-40	2.59e-13	2.51e-13	2.41e-13	2.32e-13	2.20e-13	2.13e-13	2.18e-13
Argon							
Ar-39	5.70e-16	5.54e-16	5.29e-16	5.10e-16	4.81e-16	4.66e-16	4.77e-16
Ar-41	7.85e-14	7.59e-14	7.21e-14	6.90e-14	6.45e-14	6.20e-14	6.37e-14
Ar-42	6.21e-16	6.03e-16	5.77e-16	5.56e-16	5.25e-16	5.08e-16	5.20e-16
Ar-43	9.93e-14	9.58e-14	9.13e-14	8.75e-14	8.21e-14	7.90e-14	8.11e-14
Ar-44	1.19e-13	1.14e-13	1.09e-13	1.05e-13	9.87e-14	9.50e-14	9.75e-14
Potassium							
K-38	1.98e-13	1.90e-13	1.82e-13	1.74e-13	1.64e-13	1.58e-13	1.62e-13
K-40	1.13e-14	1.09e-14	1.04e-14	1.00e-14	9.39e-15	9.04e-15	9.28e-15
K-42	2.37e-14	2.29e-14	2.19e-14	2.10e-14	1.98e-14	1.91e-14	1.96e-14
K-43	5.80e-14	5.46e-14	5.16e-14	4.91e-14	4.51e-14	4.32e-14	4.47e-14
K-44	1.53e-13	1.48e-13	1.41e-13	1.36e-13	1.28e-13	1.23e-13	1.26e-13
K-45	1.16e-13	1.11e-13	1.06e-13	1.02e-13	9.59e-14	9.24e-14	9.48e-14
K-46	1.90e-13	1.85e-13	1.77e-13	1.70e-13	1.61e-13	1.55e-13	1.59e-13
Calcium							
Ca-45	1.16e-16	1.12e-16	1.07e-16	1.03e-16	9.63e-17	9.29e-17	9.53e-17

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Ca-47	6.42e-14	6.20e-14	5.89e-14	5.63e-14	5.26e-14	5.05e-14	5.19e-14
Ca-49	2.01e-13	1.95e-13	1.88e-13	1.82e-13	1.73e-13	1.68e-13	1.71e-13
Scandium							
Sc-42m	2.57e-13	2.46e-13	2.34e-13	2.23e-13	2.08e-13	1.99e-13	2.05e-13
Sc-43	5.95e-14	5.60e-14	5.31e-14	5.05e-14	4.63e-14	4.43e-14	4.58e-14
Sc-44	1.29e-13	1.23e-13	1.17e-13	1.12e-13	1.03e-13	9.90e-14	1.02e-13
Sc-44m	1.64e-14	1.52e-14	1.41e-14	1.34e-14	1.23e-14	1.19e-14	1.23e-14
Sc-46	1.20e-13	1.16e-13	1.09e-13	1.04e-13	9.69e-14	9.29e-14	9.57e-14
Sc-47	6.80e-15	6.22e-15	5.80e-15	5.57e-15	4.99e-15	4.83e-15	5.00e-15
Sc-48	2.01e-13	1.94e-13	1.84e-13	1.75e-13	1.63e-13	1.57e-13	1.62e-13
Sc-49	3.32e-15	3.23e-15	3.09e-15	2.97e-15	2.80e-15	2.71e-15	2.77e-15
Sc-50	2.00e-13	1.93e-13	1.83e-13	1.75e-13	1.64e-13	1.57e-13	1.62e-13
Titanium							
Ti-44	6.84e-15	6.12e-15	5.35e-15	5.21e-15	4.20e-15	3.75e-15	4.06e-15
Ti-45	5.26e-14	4.95e-14	4.70e-14	4.47e-14	4.10e-14	3.92e-14	4.05e-14
Ti-51	2.55e-14	2.39e-14	2.24e-14	2.14e-14	1.97e-14	1.89e-14	1.95e-14
Ti-52	1.03e-14	9.44e-15	8.85e-15	8.43e-15	7.62e-15	7.39e-15	7.64e-15
Vanadium							
V-47	6.20e-14	5.84e-14	5.54e-14	5.27e-14	4.84e-14	4.64e-14	4.79e-14
V-48	1.74e-13	1.68e-13	1.59e-13	1.52e-13	1.41e-13	1.35e-13	1.39e-13
V-50	8.57e-14	8.27e-14	7.89e-14	7.56e-14	7.10e-14	6.83e-14	7.01e-14
V-52	9.15e-14	8.85e-14	8.43e-14	8.07e-14	7.58e-14	7.29e-14	7.49e-14
V-53	6.62e-14	6.39e-14	6.05e-14	5.77e-14	5.37e-14	5.15e-14	5.30e-14
Chromium							
Cr-48	2.59e-14	2.37e-14	2.21e-14	2.09e-14	1.91e-14	1.83e-14	1.90e-14
Cr-49	6.42e-14	6.01e-14	5.69e-14	5.41e-14	4.95e-14	4.73e-14	4.90e-14
Cr-51	1.89e-15	1.75e-15	1.63e-15	1.55e-15	1.42e-15	1.36e-15	1.41e-15
Cr-55	4.84e-15	4.70e-15	4.49e-15	4.32e-15	4.08e-15	3.94e-15	4.04e-15
Cr-56	6.53e-15	5.95e-15	5.43e-15	5.22e-15	4.55e-15	4.27e-15	4.49e-15
Manganese							
Mn-50m	2.84e-13	2.72e-13	2.59e-13	2.47e-13	2.29e-13	2.20e-13	2.27e-13
Mn-51	6.28e-14	5.92e-14	5.62e-14	5.34e-14	4.91e-14	4.70e-14	4.86e-14
Mn-52	2.07e-13	1.99e-13	1.88e-13	1.80e-13	1.67e-13	1.60e-13	1.65e-13

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Mn-52m	1.49e-13	1.42e-13	1.35e-13	1.29e-13	1.20e-13	1.15e-13	1.18e-13
Mn-54	4.96e-14	4.76e-14	4.50e-14	4.28e-14	3.96e-14	3.79e-14	3.91e-14
Mn-56	1.05e-13	1.01e-13	9.66e-14	9.25e-14	8.66e-14	8.32e-14	8.55e-14
Mn-57	1.05e-14	1.00e-14	9.51e-15	9.10e-15	8.46e-15	8.15e-15	8.38e-15
Mn-58m	1.52e-13	1.46e-13	1.39e-13	1.33e-13	1.24e-13	1.19e-13	1.22e-13
Iron							
Fe-52	4.43e-14	4.14e-14	3.91e-14	3.72e-14	3.40e-14	3.26e-14	3.37e-14
Fe-53	7.45e-14	7.01e-14	6.65e-14	6.33e-14	5.82e-14	5.57e-14	5.76e-14
Fe-53m	1.83e-13	1.76e-13	1.67e-13	1.60e-13	1.49e-13	1.43e-13	1.47e-13
Fe-55	9.59e-24	8.60e-24	8.00e-24	7.59e-24	6.73e-24	6.54e-24	6.79e-24
Fe-59	7.13e-14	6.89e-14	6.53e-14	6.24e-14	5.82e-14	5.58e-14	5.74e-14
Fe-60	7.94e-17	7.69e-17	7.31e-17	7.00e-17	6.54e-17	6.30e-17	6.47e-17
Fe-61	8.82e-14	8.50e-14	8.06e-14	7.71e-14	7.20e-14	6.91e-14	7.11e-14
Fe-62	3.32e-14	3.13e-14	2.97e-14	2.83e-14	2.60e-14	2.49e-14	2.57e-14
Cobalt							
Co-54m	2.45e-13	2.35e-13	2.23e-13	2.13e-13	1.98e-13	1.90e-13	1.96e-13
Co-55	1.20e-13	1.15e-13	1.09e-13	1.03e-13	9.57e-14	9.17e-14	9.46e-14
Co-56	2.20e-13	2.12e-13	2.03e-13	1.94e-13	1.82e-13	1.75e-13	1.80e-13
Co-57	7.16e-15	6.41e-15	5.96e-15	5.65e-15	5.01e-15	4.87e-15	5.06e-15
Co-58	5.78e-14	5.53e-14	5.23e-14	4.98e-14	4.59e-14	4.40e-14	4.54e-14
Co-58m	1.40e-19	9.34e-20	7.92e-20	7.22e-20	4.92e-20	4.29e-20	4.98e-20
Co-60	1.50e-13	1.45e-13	1.38e-13	1.32e-13	1.23e-13	1.18e-13	1.21e-13
Co-60m	2.56e-16	2.42e-16	2.25e-16	2.16e-16	1.97e-16	1.87e-16	1.94e-16
Co-61	6.60e-15	6.18e-15	5.66e-15	5.46e-15	4.80e-15	4.49e-15	4.71e-15
Co-62	1.05e-13	1.02e-13	9.67e-14	9.27e-14	8.70e-14	8.36e-14	8.59e-14
Co-62m	1.67e-13	1.61e-13	1.53e-13	1.47e-13	1.37e-13	1.32e-13	1.36e-13
Nickel							
Ni-56	1.02e-13	9.70e-14	9.17e-14	8.74e-14	8.06e-14	7.73e-14	7.98e-14
Ni-57	1.17e-13	1.12e-13	1.07e-13	1.02e-13	9.51e-14	9.14e-14	9.40e-14
Ni-59	9.17e-19	8.63e-19	8.19e-19	7.78e-19	7.14e-19	6.83e-19	7.06e-19
Ni-63	5.97e-18	5.76e-18	5.45e-18	5.20e-18	4.82e-18	4.62e-18	4.76e-18
Ni-65	3.60e-14	3.47e-14	3.30e-14	3.16e-14	2.96e-14	2.84e-14	2.92e-14
Ni-66	1.07e-16	1.04e-16	9.86e-17	9.47e-17	8.88e-17	8.57e-17	8.79e-17
Copper							

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Cu-57	9.63e-14	9.18e-14	8.75e-14	8.37e-14	7.78e-14	7.48e-14	7.70e-14
Cu-59	9.29e-14	8.80e-14	8.36e-14	7.96e-14	7.35e-14	7.04e-14	7.27e-14
Cu-60	2.39e-13	2.29e-13	2.19e-13	2.09e-13	1.96e-13	1.88e-13	1.93e-13
Cu-61	4.97e-14	4.68e-14	4.44e-14	4.22e-14	3.88e-14	3.71e-14	3.84e-14
Cu-62	6.53e-14	6.16e-14	5.85e-14	5.57e-14	5.12e-14	4.90e-14	5.06e-14
Cu-64	1.12e-14	1.06e-14	1.00e-14	9.53e-15	8.76e-15	8.38e-15	8.66e-15
Cu-66	1.05e-14	1.01e-14	9.62e-15	9.21e-15	8.61e-15	8.29e-15	8.52e-15
Cu-67	7.07e-15	6.45e-15	5.95e-15	5.67e-15	5.10e-15	4.92e-15	5.10e-15
Cu-69	3.52e-14	3.39e-14	3.21e-14	3.06e-14	2.85e-14	2.73e-14	2.81e-14
Zinc							
Zn-60	9.51e-14	8.97e-14	8.50e-14	8.09e-14	7.43e-14	7.11e-14	7.35e-14
Zn-61	1.01e-13	9.60e-14	9.14e-14	8.72e-14	8.09e-14	7.76e-14	8.00e-14
Zn-62	2.58e-14	2.42e-14	2.29e-14	2.18e-14	2.00e-14	1.91e-14	1.98e-14
Zn-63	6.87e-14	6.49e-14	6.16e-14	5.86e-14	5.39e-14	5.16e-14	5.33e-14
Zn-65	3.46e-14	3.34e-14	3.16e-14	3.02e-14	2.81e-14	2.69e-14	2.77e-14
Zn-69	9.72e-16	9.44e-16	9.03e-16	8.70e-16	8.21e-16	7.95e-16	8.14e-16
Zn-69m	2.46e-14	2.30e-14	2.18e-14	2.07e-14	1.90e-14	1.81e-14	1.87e-14
Zn-71	2.32e-14	2.21e-14	2.10e-14	2.00e-14	1.85e-14	1.78e-14	1.83e-14
Zn-71m	9.43e-14	8.90e-14	8.43e-14	8.02e-14	7.38e-14	7.06e-14	7.30e-14
Zn-72	8.77e-15	7.96e-15	7.40e-15	7.08e-15	6.30e-15	6.10e-15	6.33e-15
Gallium							
Ga-64	2.13e-13	2.05e-13	1.95e-13	1.87e-13	1.75e-13	1.69e-13	1.73e-13
Ga-65	7.19e-14	6.76e-14	6.41e-14	6.09e-14	5.59e-14	5.36e-14	5.54e-14
Ga-66	1.57e-13	1.51e-13	1.45e-13	1.39e-13	1.31e-13	1.26e-13	1.29e-13
Ga-67	9.11e-15	8.32e-15	7.69e-15	7.30e-15	6.59e-15	6.32e-15	6.56e-15
Ga-68	5.89e-14	5.56e-14	5.28e-14	5.02e-14	4.61e-14	4.42e-14	4.57e-14
Ga-70	2.84e-15	2.75e-15	2.63e-15	2.53e-15	2.38e-15	2.30e-15	2.36e-15
Ga-72	1.65e-13	1.59e-13	1.52e-13	1.45e-13	1.36e-13	1.31e-13	1.35e-13
Ga-73	2.20e-14	2.05e-14	1.92e-14	1.82e-14	1.68e-14	1.61e-14	1.66e-14
Ga-74	1.95e-13	1.88e-13	1.80e-13	1.73e-13	1.62e-13	1.56e-13	1.60e-13
Germanium							
Ge-66	3.98e-14	3.72e-14	3.51e-14	3.33e-14	3.06e-14	2.92e-14	3.02e-14
Ge-67	8.98e-14	8.49e-14	8.05e-14	7.67e-14	7.07e-14	6.78e-14	7.00e-14
Ge-68	8.14e-19	3.96e-19	3.50e-19	3.27e-19	8.87e-20	7.64e-20	1.26e-19

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Ge-69	5.68e-14	5.43e-14	5.15e-14	4.91e-14	4.55e-14	4.36e-14	4.50e-14
Ge-71	8.26e-19	4.02e-19	3.56e-19	3.32e-19	9.00e-20	7.75e-20	1.28e-19
Ge-75	3.48e-15	3.28e-15	3.08e-15	2.95e-15	2.73e-15	2.63e-15	2.71e-15
Ge-77	6.67e-14	6.31e-14	5.95e-14	5.67e-14	5.24e-14	5.03e-14	5.19e-14
Ge-78	1.72e-14	1.59e-14	1.47e-14	1.40e-14	1.29e-14	1.24e-14	1.28e-14
Arsenic							
As-68	2.33e-13	2.23e-13	2.12e-13	2.03e-13	1.89e-13	1.81e-13	1.86e-13
As-69	7.32e-14	6.91e-14	6.56e-14	6.25e-14	5.76e-14	5.52e-14	5.70e-14
As-70	2.58e-13	2.47e-13	2.35e-13	2.24e-13	2.09e-13	2.00e-13	2.06e-13
As-71	3.42e-14	3.21e-14	3.02e-14	2.88e-14	2.64e-14	2.53e-14	2.62e-14
As-72	1.10e-13	1.05e-13	9.96e-14	9.49e-14	8.76e-14	8.40e-14	8.67e-14
As-73	2.44e-16	2.07e-16	1.74e-16	1.64e-16	1.32e-16	1.18e-16	1.29e-16
As-74	4.56e-14	4.30e-14	4.09e-14	3.88e-14	3.57e-14	3.42e-14	3.53e-14
As-76	2.94e-14	2.81e-14	2.67e-14	2.55e-14	2.36e-14	2.26e-14	2.33e-14
As-77	1.10e-15	1.04e-15	9.86e-16	9.45e-16	8.80e-16	8.48e-16	8.72e-16
As-78	8.42e-14	8.08e-14	7.69e-14	7.35e-14	6.86e-14	6.59e-14	6.78e-14
As-79	5.59e-15	5.38e-15	5.12e-15	4.91e-15	4.59e-15	4.42e-15	4.54e-15
Selenium							
Se-70	4.24e-14	3.97e-14	3.75e-14	3.56e-14	3.27e-14	3.12e-14	3.23e-14
Se-71	1.02e-13	9.65e-14	9.16e-14	8.72e-14	8.05e-14	7.72e-14	7.97e-14
Se-72	1.05e-15	8.62e-16	7.18e-16	6.56e-16	5.30e-16	4.77e-16	5.23e-16
Se-73	6.51e-14	6.10e-14	5.76e-14	5.47e-14	5.00e-14	4.78e-14	4.95e-14
Se-73m	1.60e-14	1.51e-14	1.43e-14	1.36e-14	1.25e-14	1.19e-14	1.23e-14
Se-75	2.28e-14	2.09e-14	1.94e-14	1.85e-14	1.68e-14	1.61e-14	1.67e-14
Se-77m	5.12e-15	4.67e-15	4.34e-15	4.17e-15	3.73e-15	3.61e-15	3.74e-15
Se-79	5.49e-17	5.31e-17	5.04e-17	4.82e-17	4.49e-17	4.32e-17	4.44e-17
Se-79m	5.39e-16	4.73e-16	4.32e-16	4.05e-16	3.52e-16	3.37e-16	3.54e-16
Se-81	2.72e-15	2.63e-15	2.51e-15	2.41e-15	2.26e-15	2.18e-15	2.24e-15
Se-81m	8.25e-16	7.27e-16	6.70e-16	6.27e-16	5.52e-16	5.34e-16	5.57e-16
Se-83	1.59e-13	1.52e-13	1.44e-13	1.38e-13	1.28e-13	1.23e-13	1.27e-13
Se-83m	6.49e-14	6.24e-14	5.93e-14	5.67e-14	5.30e-14	5.09e-14	5.24e-14
Se-84	2.68e-14	2.51e-14	2.37e-14	2.25e-14	2.07e-14	1.98e-14	2.05e-14
Bromine							

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Br-72	1.95e-13	1.86e-13	1.77e-13	1.69e-13	1.57e-13	1.51e-13	1.55e-13
Br-73	9.07e-14	8.57e-14	8.12e-14	7.72e-14	7.10e-14	6.80e-14	7.03e-14
Br-74	2.87e-13	2.76e-13	2.65e-13	2.54e-13	2.39e-13	2.31e-13	2.37e-13
Br-74m	2.56e-13	2.46e-13	2.35e-13	2.25e-13	2.10e-13	2.02e-13	2.08e-13
Br-75	7.28e-14	6.84e-14	6.46e-14	6.14e-14	5.64e-14	5.40e-14	5.58e-14
Br-76	1.71e-13	1.64e-13	1.57e-13	1.50e-13	1.40e-13	1.35e-13	1.39e-13
Br-76m	1.53e-15	1.31e-15	1.14e-15	1.07e-15	8.98e-16	8.26e-16	8.85e-16
Br-77	1.87e-14	1.75e-14	1.65e-14	1.57e-14	1.44e-14	1.38e-14	1.43e-14
Br-77m	8.87e-16	7.83e-16	7.22e-16	6.76e-16	5.96e-16	5.77e-16	6.02e-16
Br-78	6.54e-14	6.17e-14	5.86e-14	5.57e-14	5.13e-14	4.91e-14	5.07e-14
Br-80	7.33e-15	7.01e-15	6.67e-15	6.37e-15	5.92e-15	5.69e-15	5.86e-15
Br-80m	4.61e-16	3.56e-16	2.92e-16	2.67e-16	2.03e-16	1.84e-16	2.05e-16
Br-82	1.57e-13	1.50e-13	1.43e-13	1.36e-13	1.26e-13	1.21e-13	1.25e-13
Br-82m	3.22e-16	3.05e-16	2.89e-16	2.76e-16	2.54e-16	2.44e-16	2.52e-16
Br-83	1.40e-15	1.34e-15	1.28e-15	1.23e-15	1.15e-15	1.11e-15	1.14e-15
Br-84	1.14e-13	1.10e-13	1.05e-13	1.01e-13	9.53e-14	9.19e-14	9.42e-14
Br-84m	1.69e-13	1.62e-13	1.54e-13	1.47e-13	1.37e-13	1.32e-13	1.36e-13
Br-85	8.41e-15	8.13e-15	7.74e-15	7.42e-15	6.95e-15	6.69e-15	6.87e-15
Krypton							
Kr-74	6.44e-14	6.03e-14	5.70e-14	5.41e-14	4.96e-14	4.74e-14	4.91e-14
Kr-75	8.31e-14	7.83e-14	7.42e-14	7.07e-14	6.49e-14	6.23e-14	6.43e-14
Kr-76	2.47e-14	2.30e-14	2.15e-14	2.04e-14	1.87e-14	1.79e-14	1.85e-14
Kr-77	6.39e-14	5.98e-14	5.66e-14	5.38e-14	4.92e-14	4.72e-14	4.88e-14
Kr-79	1.48e-14	1.39e-14	1.31e-14	1.24e-14	1.14e-14	1.09e-14	1.13e-14
Kr-81	6.38e-17	5.46e-17	4.93e-17	4.66e-17	3.86e-17	3.69e-17	3.91e-17
Kr-81m	7.69e-15	7.04e-15	6.49e-15	6.19e-15	5.61e-15	5.41e-15	5.60e-15
Kr-83m	5.72e-18	3.89e-18	3.01e-18	2.74e-18	1.04e-18	9.20e-19	1.30e-18
Kr-85	8.28e-16	8.01e-16	7.65e-16	7.35e-16	6.91e-16	6.67e-16	6.84e-16
Kr-85m	9.94e-15	9.12e-15	8.51e-15	8.15e-15	7.34e-15	7.09e-15	7.34e-15
Kr-87	5.43e-14	5.21e-14	4.98e-14	4.78e-14	4.49e-14	4.33e-14	4.44e-14
Kr-88	1.20e-13	1.16e-13	1.11e-13	1.07e-13	1.01e-13	9.73e-14	9.97e-14
Kr-89	1.24e-13	1.19e-13	1.14e-13	1.09e-13	1.03e-13	9.89e-14	1.01e-13
Rubidium							
Rb-77	9.95e-14	9.42e-14	8.92e-14	8.50e-14	7.83e-14	7.49e-14	7.74e-14

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Rb-78	2.56e-13	2.46e-13	2.36e-13	2.27e-13	2.13e-13	2.06e-13	2.11e-13
Rb-78m	2.00e-13	1.91e-13	1.82e-13	1.74e-13	1.61e-13	1.55e-13	1.60e-13
Rb-79	8.87e-14	8.35e-14	7.91e-14	7.53e-14	6.92e-14	6.63e-14	6.85e-14
Rb-80	8.14e-14	7.70e-14	7.32e-14	6.96e-14	6.42e-14	6.15e-14	6.35e-14
Rb-81	3.01e-14	2.84e-14	2.69e-14	2.56e-14	2.35e-14	2.25e-14	2.33e-14
Rb-81m	1.45e-15	1.35e-15	1.27e-15	1.21e-15	1.09e-15	1.04e-15	1.08e-15
Rb-82	7.22e-14	6.82e-14	6.48e-14	6.16e-14	5.68e-14	5.44e-14	5.62e-14
Rb-82m	1.74e-13	1.66e-13	1.57e-13	1.50e-13	1.39e-13	1.33e-13	1.37e-13
Rb-83	2.86e-14	2.69e-14	2.56e-14	2.43e-14	2.23e-14	2.13e-14	2.20e-14
Rb-84	5.42e-14	5.17e-14	4.90e-14	4.66e-14	4.30e-14	4.12e-14	4.25e-14
Rb-84m	2.26e-14	2.10e-14	1.96e-14	1.86e-14	1.71e-14	1.64e-14	1.70e-14
Rb-86	8.11e-15	7.85e-15	7.45e-15	7.13e-15	6.66e-15	6.40e-15	6.58e-15
Rb-86m	3.23e-14	3.04e-14	2.89e-14	2.74e-14	2.52e-14	2.41e-14	2.49e-14
Rb-87	2.15e-16	2.09e-16	1.99e-16	1.92e-16	1.80e-16	1.74e-16	1.78e-16
Rb-88	5.06e-14	4.89e-14	4.68e-14	4.50e-14	4.24e-14	4.09e-14	4.19e-14
Rb-89	1.40e-13	1.35e-13	1.29e-13	1.23e-13	1.15e-13	1.11e-13	1.14e-13
Rb-90	1.39e-13	1.35e-13	1.30e-13	1.25e-13	1.19e-13	1.15e-13	1.18e-13
Rb-90m	2.05e-13	1.98e-13	1.90e-13	1.82e-13	1.72e-13	1.66e-13	1.70e-13
Strontium							
Sr-79	7.88e-14	7.42e-14	7.03e-14	6.69e-14	6.15e-14	5.89e-14	6.09e-14
Sr-80	2.55e-14	2.40e-14	2.28e-14	2.16e-14	1.99e-14	1.90e-14	1.96e-14
Sr-81	8.61e-14	8.10e-14	7.68e-14	7.31e-14	6.71e-14	6.43e-14	6.65e-14
Sr-82	2.42e-17	1.70e-17	1.30e-17	1.17e-17	4.45e-18	3.93e-18	5.56e-18
Sr-83	4.86e-14	4.62e-14	4.37e-14	4.16e-14	3.84e-14	3.68e-14	3.80e-14
Sr-85	2.91e-14	2.73e-14	2.60e-14	2.47e-14	2.26e-14	2.16e-14	2.24e-14
Sr-85m	1.29e-14	1.19e-14	1.09e-14	1.04e-14	9.49e-15	9.14e-15	9.46e-15
Sr-87m	1.89e-14	1.76e-14	1.66e-14	1.58e-14	1.45e-14	1.38e-14	1.43e-14
Sr-89	2.14e-15	2.08e-15	1.99e-15	1.91e-15	1.81e-15	1.75e-15	1.79e-15
Sr-90	4.93e-16	4.79e-16	4.58e-16	4.41e-16	4.16e-16	4.03e-16	4.12e-16
Sr-91	4.47e-14	4.29e-14	4.06e-14	3.87e-14	3.59e-14	3.44e-14	3.55e-14
Sr-92	8.08e-14	7.80e-14	7.42e-14	7.10e-14	6.65e-14	6.39e-14	6.57e-14
Sr-93	1.39e-13	1.33e-13	1.26e-13	1.21e-13	1.12e-13	1.08e-13	1.11e-13
Sr-94	8.92e-14	8.61e-14	8.20e-14	7.86e-14	7.37e-14	7.08e-14	7.27e-14
Yttrium							

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Y-81	7.88e-14	7.41e-14	7.03e-14	6.69e-14	6.14e-14	5.88e-14	6.08e-14
Y-83	8.53e-14	8.08e-14	7.67e-14	7.31e-14	6.74e-14	6.46e-14	6.67e-14
Y-83m	5.29e-14	4.97e-14	4.70e-14	4.47e-14	4.11e-14	3.93e-14	4.06e-14
Y-84m	2.42e-13	2.32e-13	2.20e-13	2.09e-13	1.94e-13	1.86e-13	1.92e-13
Y-85	6.55e-14	6.17e-14	5.86e-14	5.57e-14	5.12e-14	4.90e-14	5.06e-14
Y-85m	8.13e-14	7.74e-14	7.36e-14	7.03e-14	6.53e-14	6.27e-14	6.46e-14
Y-86	2.15e-13	2.06e-13	1.96e-13	1.87e-13	1.74e-13	1.67e-13	1.72e-13
Y-86m	1.31e-14	1.21e-14	1.12e-14	1.06e-14	9.71e-15	9.35e-15	9.68e-15
Y-87	2.59e-14	2.43e-14	2.30e-14	2.19e-14	2.00e-14	1.92e-14	1.99e-14
Y-87m	1.81e-14	1.69e-14	1.59e-14	1.51e-14	1.39e-14	1.33e-14	1.38e-14
Y-88	1.62e-13	1.56e-13	1.49e-13	1.43e-13	1.34e-13	1.29e-13	1.32e-13
Y-89m	5.36e-14	5.16e-14	4.88e-14	4.65e-14	4.30e-14	4.12e-14	4.25e-14
Y-90	3.91e-15	3.79e-15	3.63e-15	3.49e-15	3.29e-15	3.18e-15	3.26e-15
Y-90m	3.76e-14	3.50e-14	3.29e-14	3.13e-14	2.86e-14	2.75e-14	2.84e-14
Y-91	2.41e-15	2.34e-15	2.24e-15	2.15e-15	2.03e-15	1.96e-15	2.01e-15
Y-91m	3.12e-14	2.94e-14	2.79e-14	2.65e-14	2.44e-14	2.33e-14	2.41e-14
Y-92	2.21e-14	2.13e-14	2.03e-14	1.94e-14	1.81e-14	1.74e-14	1.79e-14
Y-93	1.11e-14	1.07e-14	1.01e-14	9.73e-15	9.14e-15	8.81e-15	9.04e-15
Y-94	5.58e-14	5.38e-14	5.11e-14	4.89e-14	4.56e-14	4.38e-14	4.51e-14
Y-95	7.52e-14	7.28e-14	6.98e-14	6.71e-14	6.35e-14	6.12e-14	6.27e-14
Zirconium							
Zr-85	9.34e-14	8.82e-14	8.38e-14	7.97e-14	7.35e-14	7.04e-14	7.27e-14
Zr-86	1.64e-14	1.51e-14	1.40e-14	1.33e-14	1.21e-14	1.17e-14	1.21e-14
Zr-87	5.82e-14	5.49e-14	5.22e-14	4.96e-14	4.57e-14	4.38e-14	4.52e-14
Zr-88	2.27e-14	2.11e-14	1.99e-14	1.89e-14	1.73e-14	1.66e-14	1.72e-14
Zr-89	6.87e-14	6.58e-14	6.22e-14	5.93e-14	5.48e-14	5.25e-14	5.42e-14
Zr-89m	3.76e-14	3.56e-14	3.39e-14	3.22e-14	2.97e-14	2.85e-14	2.94e-14
Zr-93	7.07e-18	6.82e-18	6.45e-18	6.15e-18	5.71e-18	5.47e-18	5.64e-18
Zr-95	4.36e-14	4.17e-14	3.95e-14	3.75e-14	3.46e-14	3.31e-14	3.42e-14
Zr-97	5.49e-14	5.25e-14	4.98e-14	4.74e-14	4.38e-14	4.20e-14	4.33e-14
Niobium							
Nb-87	8.02e-14	7.53e-14	7.12e-14	6.78e-14	6.23e-14	5.97e-14	6.17e-14
Nb-88	2.57e-13	2.45e-13	2.32e-13	2.21e-13	2.05e-13	1.96e-13	2.02e-13
Nb-88m	2.52e-13	2.41e-13	2.28e-13	2.18e-13	2.02e-13	1.94e-13	2.00e-13

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Nb-89	8.69e-14	8.28e-14	7.90e-14	7.55e-14	7.03e-14	6.75e-14	6.95e-14
Nb-89m	8.03e-14	7.57e-14	7.18e-14	6.83e-14	6.28e-14	6.01e-14	6.21e-14
Nb-90	2.56e-13	2.46e-13	2.35e-13	2.26e-13	2.12e-13	2.04e-13	2.09e-13
Nb-91	1.42e-16	1.21e-16	1.11e-16	1.04e-16	8.51e-17	8.05e-17	8.58e-17
Nb-91m	1.55e-15	1.48e-15	1.40e-15	1.33e-15	1.23e-15	1.18e-15	1.22e-15
Nb-92	8.88e-14	8.49e-14	8.04e-14	7.65e-14	7.06e-14	6.76e-14	6.98e-14
Nb-92m	5.71e-14	5.50e-14	5.20e-14	4.95e-14	4.59e-14	4.40e-14	4.54e-14
Nb-93m	1.01e-17	6.67e-18	5.70e-18	4.91e-18	2.52e-18	2.22e-18	2.82e-18
Nb-94	9.29e-14	8.89e-14	8.41e-14	8.01e-14	7.40e-14	7.08e-14	7.31e-14
Nb-94m	3.07e-16	2.83e-16	2.66e-16	2.51e-16	2.25e-16	2.14e-16	2.23e-16
Nb-95	4.54e-14	4.34e-14	4.11e-14	3.91e-14	3.61e-14	3.45e-14	3.56e-14
Nb-95m	3.91e-15	3.60e-15	3.32e-15	3.16e-15	2.89e-15	2.79e-15	2.88e-15
Nb-96	1.47e-13	1.41e-13	1.33e-13	1.27e-13	1.17e-13	1.12e-13	1.16e-13
Nb-97	4.09e-14	3.89e-14	3.70e-14	3.51e-14	3.24e-14	3.10e-14	3.20e-14
Nb-98m	1.71e-13	1.64e-13	1.56e-13	1.49e-13	1.38e-13	1.33e-13	1.37e-13
Nb-99	1.68e-14	1.56e-14	1.47e-14	1.40e-14	1.28e-14	1.23e-14	1.27e-14
Nb-99m	5.29e-14	5.10e-14	4.88e-14	4.68e-14	4.41e-14	4.26e-14	4.37e-14
Molybdenum							
Mo-89	8.27e-14	7.84e-14	7.45e-14	7.10e-14	6.56e-14	6.28e-14	6.48e-14
Mo-90	4.91e-14	4.60e-14	4.32e-14	4.11e-14	3.78e-14	3.62e-14	3.74e-14
Mo-91	6.47e-14	6.11e-14	5.81e-14	5.52e-14	5.09e-14	4.87e-14	5.03e-14
Mo-91m	8.49e-14	8.11e-14	7.71e-14	7.35e-14	6.82e-14	6.54e-14	6.74e-14
Mo-93	5.66e-17	3.73e-17	3.19e-17	2.75e-17	1.41e-17	1.24e-17	1.58e-17
Mo-93m	1.39e-13	1.33e-13	1.26e-13	1.21e-13	1.13e-13	1.08e-13	1.11e-13
Mo-99	1.00e-14	9.55e-15	9.03e-15	8.60e-15	7.94e-15	7.62e-15	7.86e-15
Mo-101	9.00e-14	8.63e-14	8.20e-14	7.84e-14	7.31e-14	7.02e-14	7.22e-14
Mo-102	2.19e-15	2.06e-15	1.94e-15	1.86e-15	1.72e-15	1.67e-15	1.72e-15
Technetium							
Tc-91	1.59e-13	1.52e-13	1.45e-13	1.39e-13	1.30e-13	1.25e-13	1.28e-13
Tc-91m	9.42e-14	8.92e-14	8.48e-14	8.07e-14	7.45e-14	7.13e-14	7.36e-14
Tc-92	2.37e-13	2.26e-13	2.15e-13	2.05e-13	1.91e-13	1.83e-13	1.89e-13
Tc-93	9.38e-14	9.04e-14	8.61e-14	8.24e-14	7.72e-14	7.41e-14	7.62e-14
Tc-93m	5.79e-14	5.55e-14	5.31e-14	5.10e-14	4.80e-14	4.63e-14	4.75e-14
Tc-94	1.58e-13	1.51e-13	1.43e-13	1.36e-13	1.26e-13	1.20e-13	1.24e-13

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Tc-94m	1.20e-13	1.14e-13	1.09e-13	1.04e-13	9.61e-14	9.21e-14	9.50e-14
Tc-95	4.66e-14	4.46e-14	4.22e-14	4.01e-14	3.71e-14	3.55e-14	3.66e-14
Tc-95m	4.03e-14	3.81e-14	3.59e-14	3.42e-14	3.14e-14	3.01e-14	3.11e-14
Tc-96	1.48e-13	1.42e-13	1.34e-13	1.28e-13	1.18e-13	1.13e-13	1.17e-13
Tc-96m	2.52e-15	2.40e-15	2.27e-15	2.17e-15	2.00e-15	1.92e-15	1.98e-15
Tc-97	6.87e-17	4.41e-17	3.86e-17	3.29e-17	1.80e-17	1.58e-17	1.97e-17
Tc-97m	8.43e-17	5.87e-17	5.29e-17	4.67e-17	3.22e-17	2.96e-17	3.36e-17
Tc-98	8.40e-14	8.00e-14	7.58e-14	7.21e-14	6.65e-14	6.36e-14	6.57e-14
Tc-99	1.80e-16	1.75e-16	1.67e-16	1.60e-16	1.51e-16	1.46e-16	1.50e-16
Tc-99m	7.41e-15	6.69e-15	6.24e-15	5.97e-15	5.30e-15	5.14e-15	5.33e-15
Tc-101	2.16e-14	2.01e-14	1.88e-14	1.79e-14	1.65e-14	1.58e-14	1.63e-14
Tc-102	1.52e-14	1.47e-14	1.40e-14	1.35e-14	1.26e-14	1.22e-14	1.25e-14
Tc-102m	1.52e-13	1.46e-13	1.39e-13	1.33e-13	1.24e-13	1.19e-13	1.22e-13
Tc-104	1.44e-13	1.38e-13	1.32e-13	1.26e-13	1.18e-13	1.14e-13	1.17e-13
Tc-105	5.32e-14	5.05e-14	4.78e-14	4.57e-14	4.24e-14	4.07e-14	4.19e-14
Ruthenium							
Ru-92	1.26e-13	1.19e-13	1.12e-13	1.07e-13	9.87e-14	9.47e-14	9.77e-14
Ru-94	3.02e-14	2.85e-14	2.68e-14	2.55e-14	2.35e-14	2.25e-14	2.32e-14
Ru-95	7.37e-14	7.02e-14	6.64e-14	6.33e-14	5.87e-14	5.63e-14	5.80e-14
Ru-97	1.37e-14	1.25e-14	1.16e-14	1.10e-14	1.00e-14	9.67e-15	1.00e-14
Ru-103	2.94e-14	2.76e-14	2.62e-14	2.49e-14	2.28e-14	2.18e-14	2.26e-14
Ru-105	4.56e-14	4.32e-14	4.09e-14	3.89e-14	3.58e-14	3.43e-14	3.54e-14
Ru-106	1.25e-18	1.20e-18	1.14e-18	1.09e-18	1.01e-18	9.66e-19	9.96e-19
Ru-107	2.53e-14	2.42e-14	2.29e-14	2.19e-14	2.03e-14	1.95e-14	2.01e-14
Ru-108	5.20e-15	4.83e-15	4.52e-15	4.34e-15	3.95e-15	3.82e-15	3.94e-15
Rhodium							
Rh-94	2.45e-13	2.35e-13	2.23e-13	2.13e-13	1.99e-13	1.91e-13	1.97e-13
Rh-95	1.57e-13	1.51e-13	1.43e-13	1.37e-13	1.27e-13	1.22e-13	1.26e-13
Rh-95m	5.48e-14	5.23e-14	5.00e-14	4.78e-14	4.46e-14	4.28e-14	4.40e-14
Rh-96	2.37e-13	2.26e-13	2.14e-13	2.04e-13	1.89e-13	1.81e-13	1.87e-13
Rh-96m	7.90e-14	7.56e-14	7.19e-14	6.87e-14	6.39e-14	6.13e-14	6.31e-14
Rh-97	8.77e-14	8.31e-14	7.89e-14	7.51e-14	6.94e-14	6.65e-14	6.86e-14
Rh-97m	1.33e-13	1.28e-13	1.22e-13	1.17e-13	1.10e-13	1.06e-13	1.09e-13
Rh-98	1.14e-13	1.08e-13	1.03e-13	9.76e-14	9.02e-14	8.64e-14	8.92e-14

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Rh-99	3.23e-14	3.03e-14	2.85e-14	2.71e-14	2.49e-14	2.38e-14	2.46e-14
Rh-99m	3.81e-14	3.59e-14	3.39e-14	3.23e-14	2.98e-14	2.85e-14	2.94e-14
Rh-100	1.65e-13	1.58e-13	1.51e-13	1.45e-13	1.36e-13	1.31e-13	1.34e-13
Rh-100m	2.74e-15	2.53e-15	2.37e-15	2.26e-15	2.04e-15	1.94e-15	2.02e-15
Rh-101	1.63e-14	1.49e-14	1.38e-14	1.31e-14	1.18e-14	1.14e-14	1.18e-14
Rh-101m	1.64e-14	1.52e-14	1.41e-14	1.34e-14	1.23e-14	1.18e-14	1.22e-14
Rh-102	3.00e-14	2.83e-14	2.69e-14	2.55e-14	2.35e-14	2.25e-14	2.32e-14
Rh-102m	1.27e-13	1.21e-13	1.15e-13	1.09e-13	1.01e-13	9.63e-14	9.95e-14
Rh-103m	1.44e-17	9.21e-18	8.10e-18	7.04e-18	4.45e-18	3.90e-18	4.64e-18
Rh-104	4.89e-15	4.73e-15	4.52e-15	4.34e-15	4.08e-15	3.94e-15	4.04e-15
Rh-104m	1.48e-15	1.24e-15	1.06e-15	9.89e-16	8.07e-16	7.31e-16	7.94e-16
Rh-105	4.94e-15	4.60e-15	4.29e-15	4.08e-15	3.75e-15	3.60e-15	3.72e-15
Rh-106	1.89e-14	1.81e-14	1.72e-14	1.64e-14	1.53e-14	1.47e-14	1.51e-14
Rh-106m	1.71e-13	1.63e-13	1.55e-13	1.48e-13	1.37e-13	1.31e-13	1.35e-13
Rh-107	2.00e-14	1.87e-14	1.75e-14	1.66e-14	1.53e-14	1.47e-14	1.52e-14
Rh-108	2.82e-14	2.68e-14	2.55e-14	2.43e-14	2.26e-14	2.17e-14	2.24e-14
Rh-109	2.15e-14	2.01e-14	1.88e-14	1.79e-14	1.65e-14	1.59e-14	1.64e-14
Palladium							
Pd-96	8.57e-14	8.13e-14	7.70e-14	7.33e-14	6.76e-14	6.48e-14	6.69e-14
Pd-97	1.46e-13	1.39e-13	1.32e-13	1.27e-13	1.18e-13	1.13e-13	1.16e-13
Pd-98	2.37e-14	2.22e-14	2.09e-14	1.98e-14	1.81e-14	1.74e-14	1.80e-14
Pd-99	7.78e-14	7.37e-14	6.99e-14	6.67e-14	6.17e-14	5.92e-14	6.10e-14
Pd-100	5.27e-15	4.64e-15	4.13e-15	3.97e-15	3.29e-15	3.02e-15	3.23e-15
Pd-101	1.96e-14	1.84e-14	1.74e-14	1.66e-14	1.52e-14	1.46e-14	1.51e-14
Pd-103	1.34e-16	8.59e-17	7.63e-17	6.66e-17	4.28e-17	3.77e-17	4.45e-17
Pd-107	9.84e-19	9.49e-19	8.97e-19	8.56e-19	7.94e-19	7.61e-19	7.84e-19
Pd-109	1.44e-15	1.35e-15	1.28e-15	1.23e-15	1.13e-15	1.09e-15	1.12e-15
Pd-109m	6.36e-15	5.81e-15	5.36e-15	5.11e-15	4.63e-15	4.46e-15	4.62e-15
Pd-111	6.24e-15	6.01e-15	5.72e-15	5.49e-15	5.14e-15	4.95e-15	5.08e-15
Pd-112	1.49e-16	1.33e-16	1.26e-16	1.19e-16	1.06e-16	1.01e-16	1.05e-16
Pd-114	3.40e-15	3.22e-15	3.04e-15	2.91e-15	2.70e-15	2.61e-15	2.68e-15
Silver							
Ag-99	1.44e-13	1.37e-13	1.30e-13	1.24e-13	1.15e-13	1.11e-13	1.14e-13
Ag-100m	1.79e-13	1.71e-13	1.62e-13	1.55e-13	1.44e-13	1.38e-13	1.42e-13

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Ag-101	9.67e-14	9.16e-14	8.68e-14	8.27e-14	7.64e-14	7.32e-14	7.55e-14
Ag-102	2.07e-13	1.98e-13	1.89e-13	1.80e-13	1.68e-13	1.61e-13	1.66e-13
Ag-102m	1.22e-13	1.17e-13	1.12e-13	1.08e-13	1.01e-13	9.74e-14	9.99e-14
Ag-103	5.02e-14	4.74e-14	4.49e-14	4.27e-14	3.94e-14	3.78e-14	3.90e-14
Ag-104	1.61e-13	1.54e-13	1.46e-13	1.39e-13	1.29e-13	1.23e-13	1.27e-13
Ag-104m	1.11e-13	1.05e-13	1.01e-13	9.60e-14	8.92e-14	8.56e-14	8.82e-14
Ag-105	2.95e-14	2.76e-14	2.59e-14	2.46e-14	2.26e-14	2.16e-14	2.24e-14
Ag-105m	5.91e-17	5.52e-17	5.17e-17	4.91e-17	4.51e-17	4.32e-17	4.47e-17
Ag-106	4.30e-14	4.05e-14	3.84e-14	3.65e-14	3.35e-14	3.21e-14	3.32e-14
Ag-106m	1.66e-13	1.59e-13	1.51e-13	1.44e-13	1.33e-13	1.27e-13	1.31e-13
Ag-108	3.33e-15	3.20e-15	3.05e-15	2.93e-15	2.74e-15	2.64e-15	2.71e-15
Ag-108m	9.52e-14	9.01e-14	8.53e-14	8.11e-14	7.46e-14	7.13e-14	7.37e-14
Ag-109m	2.63e-16	2.13e-16	1.90e-16	1.77e-16	1.43e-16	1.32e-16	1.43e-16
Ag-110	7.11e-15	6.86e-15	6.55e-15	6.28e-15	5.89e-15	5.68e-15	5.83e-15
Ag-110m	1.64e-13	1.58e-13	1.49e-13	1.42e-13	1.32e-13	1.27e-13	1.31e-13
Ag-111	2.68e-15	2.53e-15	2.39e-15	2.28e-15	2.12e-15	2.04e-15	2.10e-15
Ag-111m	2.51e-16	2.20e-16	2.03e-16	1.91e-16	1.68e-16	1.59e-16	1.67e-16
Ag-112	4.79e-14	4.60e-14	4.39e-14	4.20e-14	3.92e-14	3.77e-14	3.88e-14
Ag-113	7.27e-15	6.92e-15	6.54e-15	6.25e-15	5.81e-15	5.60e-15	5.76e-15
Ag-113m	1.33e-14	1.24e-14	1.17e-14	1.11e-14	1.02e-14	9.79e-15	1.01e-14
Ag-114	2.73e-14	2.63e-14	2.51e-14	2.40e-14	2.25e-14	2.17e-14	2.23e-14
Ag-115	3.40e-14	3.25e-14	3.10e-14	2.97e-14	2.78e-14	2.67e-14	2.74e-14
Ag-116	1.39e-13	1.34e-13	1.28e-13	1.23e-13	1.16e-13	1.11e-13	1.14e-13
Ag-117	8.51e-14	8.18e-14	7.83e-14	7.52e-14	7.07e-14	6.82e-14	6.99e-14
Cadmium							
Cd-101	1.53e-13	1.46e-13	1.39e-13	1.33e-13	1.24e-13	1.19e-13	1.22e-13
Cd-102	4.91e-14	4.64e-14	4.40e-14	4.18e-14	3.85e-14	3.69e-14	3.81e-14
Cd-103	1.27e-13	1.22e-13	1.16e-13	1.11e-13	1.04e-13	1.00e-13	1.03e-13
Cd-104	1.35e-14	1.27e-14	1.19e-14	1.13e-14	1.02e-14	9.74e-15	1.01e-14
Cd-105	7.82e-14	7.49e-14	7.14e-14	6.83e-14	6.38e-14	6.13e-14	6.30e-14
Cd-107	7.96e-16	6.57e-16	6.00e-16	5.59e-16	4.69e-16	4.40e-16	4.69e-16
Cd-109	4.33e-16	3.22e-16	2.85e-16	2.62e-16	1.98e-16	1.80e-16	1.99e-16
Cd-111m	1.65e-14	1.51e-14	1.40e-14	1.33e-14	1.21e-14	1.17e-14	1.21e-14
Cd-113	1.60e-16	1.55e-16	1.48e-16	1.42e-16	1.34e-16	1.29e-16	1.32e-16

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Cd-113m	4.60e-16	4.46e-16	4.27e-16	4.11e-16	3.88e-16	3.75e-16	3.84e-16
Cd-115	1.23e-14	1.16e-14	1.10e-14	1.05e-14	9.62e-15	9.22e-15	9.53e-15
Cd-115m	4.19e-15	4.06e-15	3.86e-15	3.70e-15	3.47e-15	3.34e-15	3.43e-15
Cd-117	6.61e-14	6.34e-14	6.01e-14	5.75e-14	5.36e-14	5.15e-14	5.30e-14
Cd-117m	1.24e-13	1.19e-13	1.14e-13	1.09e-13	1.02e-13	9.85e-14	1.01e-13
Cd-118	3.76e-16	3.65e-16	3.49e-16	3.36e-16	3.17e-16	3.07e-16	3.14e-16
Cd-119	1.02e-13	9.82e-14	9.36e-14	8.97e-14	8.42e-14	8.10e-14	8.32e-14
Cd-119m	1.41e-13	1.36e-13	1.30e-13	1.24e-13	1.17e-13	1.12e-13	1.15e-13
Indium							
In-103	1.73e-13	1.65e-13	1.57e-13	1.50e-13	1.39e-13	1.34e-13	1.38e-13
In-105	1.20e-13	1.14e-13	1.08e-13	1.03e-13	9.55e-14	9.16e-14	9.44e-14
In-106	2.16e-13	2.06e-13	1.95e-13	1.86e-13	1.72e-13	1.64e-13	1.69e-13
In-106m	1.78e-13	1.70e-13	1.62e-13	1.55e-13	1.45e-13	1.39e-13	1.43e-13
In-107	9.25e-14	8.82e-14	8.39e-14	8.02e-14	7.48e-14	7.18e-14	7.39e-14
In-108	2.33e-13	2.24e-13	2.12e-13	2.02e-13	1.88e-13	1.80e-13	1.86e-13
In-108m	1.71e-13	1.64e-13	1.57e-13	1.50e-13	1.41e-13	1.36e-13	1.40e-13
In-109	3.76e-14	3.55e-14	3.34e-14	3.19e-14	2.94e-14	2.82e-14	2.91e-14
In-109m	3.60e-14	3.42e-14	3.24e-14	3.08e-14	2.84e-14	2.71e-14	2.80e-14
In-110	1.83e-13	1.75e-13	1.66e-13	1.58e-13	1.46e-13	1.40e-13	1.44e-13
In-110m	9.62e-14	9.14e-14	8.69e-14	8.28e-14	7.66e-14	7.34e-14	7.57e-14
In-111	2.32e-14	2.13e-14	1.96e-14	1.87e-14	1.70e-14	1.64e-14	1.70e-14
In-111m	2.77e-14	2.61e-14	2.48e-14	2.36e-14	2.16e-14	2.07e-14	2.14e-14
In-112	1.63e-14	1.54e-14	1.46e-14	1.39e-14	1.28e-14	1.22e-14	1.26e-14
In-112m	1.43e-15	1.26e-15	1.17e-15	1.11e-15	9.76e-16	9.40e-16	9.81e-16
In-113m	1.52e-14	1.42e-14	1.33e-14	1.27e-14	1.16e-14	1.11e-14	1.15e-14
In-114	3.20e-15	3.10e-15	2.96e-15	2.85e-15	2.69e-15	2.60e-15	2.66e-15
In-114m	4.40e-15	4.09e-15	3.83e-15	3.65e-15	3.33e-15	3.19e-15	3.30e-15
In-115	3.46e-16	3.36e-16	3.22e-16	3.10e-16	2.92e-16	2.82e-16	2.89e-16
In-115m	9.39e-15	8.70e-15	8.14e-15	7.73e-15	7.08e-15	6.79e-15	7.03e-15
In-116m	1.49e-13	1.44e-13	1.37e-13	1.31e-13	1.22e-13	1.17e-13	1.20e-13
In-117	4.15e-14	3.89e-14	3.68e-14	3.51e-14	3.20e-14	3.07e-14	3.18e-14
In-117m	6.51e-15	6.05e-15	5.67e-15	5.42e-15	4.96e-15	4.78e-15	4.94e-15
In-118	1.46e-14	1.41e-14	1.35e-14	1.30e-14	1.22e-14	1.18e-14	1.21e-14
In-118m	1.68e-13	1.62e-13	1.54e-13	1.47e-13	1.37e-13	1.31e-13	1.35e-13

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
In-119	4.77e-14	4.56e-14	4.32e-14	4.11e-14	3.80e-14	3.63e-14	3.75e-14
In-119m	8.22e-15	7.94e-15	7.55e-15	7.24e-15	6.78e-15	6.53e-15	6.71e-15
In-121	5.93e-14	5.70e-14	5.39e-14	5.14e-14	4.77e-14	4.57e-14	4.71e-14
In-121m	1.05e-14	1.01e-14	9.60e-15	9.23e-15	8.61e-15	8.28e-15	8.51e-15
Tin							
Sn-106	7.13e-14	6.74e-14	6.37e-14	6.06e-14	5.58e-14	5.35e-14	5.53e-14
Sn-108	3.96e-14	3.70e-14	3.48e-14	3.30e-14	3.03e-14	2.90e-14	3.00e-14
Sn-109	1.32e-13	1.27e-13	1.21e-13	1.16e-13	1.09e-13	1.04e-13	1.07e-13
Sn-110	1.65e-14	1.52e-14	1.41e-14	1.34e-14	1.22e-14	1.18e-14	1.22e-14
Sn-111	2.93e-14	2.77e-14	2.64e-14	2.51e-14	2.32e-14	2.23e-14	2.30e-14
Sn-113	5.71e-16	4.64e-16	4.16e-16	3.90e-16	3.26e-16	3.06e-16	3.26e-16
Sn-113m	2.16e-16	1.51e-16	1.28e-16	1.18e-16	8.39e-17	7.37e-17	8.40e-17
Sn-117m	8.59e-15	7.77e-15	7.22e-15	6.92e-15	6.15e-15	5.95e-15	6.18e-15
Sn-119m	2.09e-16	1.41e-16	1.19e-16	1.09e-16	7.49e-17	6.54e-17	7.56e-17
Sn-121	2.28e-16	2.21e-16	2.11e-16	2.03e-16	1.91e-16	1.85e-16	1.89e-16
Sn-121m	1.46e-16	1.18e-16	1.05e-16	9.85e-17	8.20e-17	7.63e-17	8.17e-17
Sn-123	2.27e-15	2.20e-15	2.10e-15	2.02e-15	1.90e-15	1.83e-15	1.88e-15
Sn-123m	9.74e-15	8.96e-15	8.38e-15	8.04e-15	7.25e-15	7.02e-15	7.26e-15
Sn-125	2.33e-14	2.25e-14	2.14e-14	2.04e-14	1.90e-14	1.83e-14	1.88e-14
Sn-125m	2.37e-14	2.22e-14	2.09e-14	1.99e-14	1.83e-14	1.76e-14	1.82e-14
Sn-126	2.79e-15	2.46e-15	2.20e-15	2.10e-15	1.77e-15	1.64e-15	1.75e-15
Sn-127	1.16e-13	1.12e-13	1.06e-13	1.01e-13	9.44e-14	9.06e-14	9.32e-14
Sn-127m	3.86e-14	3.66e-14	3.48e-14	3.32e-14	3.07e-14	2.94e-14	3.03e-14
Sn-128	3.42e-14	3.19e-14	3.01e-14	2.86e-14	2.61e-14	2.49e-14	2.58e-14
Sn-129	6.58e-14	6.29e-14	5.98e-14	5.70e-14	5.29e-14	5.07e-14	5.23e-14
Sn-130	5.61e-14	5.30e-14	4.98e-14	4.74e-14	4.35e-14	4.16e-14	4.30e-14
Sn-130m	5.89e-14	5.64e-14	5.34e-14	5.10e-14	4.74e-14	4.55e-14	4.69e-14
Antimony							
Sb-111	9.42e-14	8.89e-14	8.42e-14	8.02e-14	7.38e-14	7.07e-14	7.30e-14
Sb-113	7.77e-14	7.33e-14	6.95e-14	6.61e-14	6.08e-14	5.82e-14	6.01e-14
Sb-114	1.66e-13	1.59e-13	1.51e-13	1.45e-13	1.35e-13	1.29e-13	1.33e-13
Sb-115	5.28e-14	4.97e-14	4.71e-14	4.48e-14	4.11e-14	3.94e-14	4.07e-14
Sb-116	1.38e-13	1.33e-13	1.26e-13	1.21e-13	1.13e-13	1.08e-13	1.11e-13
Sb-116m	1.84e-13	1.77e-13	1.67e-13	1.59e-13	1.48e-13	1.42e-13	1.46e-13

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Sb-117	1.01e-14	9.16e-15	8.54e-15	8.17e-15	7.30e-15	7.05e-15	7.31e-15
Sb-118	5.11e-14	4.82e-14	4.58e-14	4.36e-14	4.01e-14	3.84e-14	3.97e-14
Sb-118m	1.54e-13	1.48e-13	1.40e-13	1.34e-13	1.24e-13	1.19e-13	1.23e-13
Sb-119	3.39e-16	2.30e-16	1.94e-16	1.77e-16	1.23e-16	1.07e-16	1.24e-16
Sb-120	2.74e-14	2.58e-14	2.44e-14	2.32e-14	2.13e-14	2.04e-14	2.11e-14
Sb-120m	1.46e-13	1.40e-13	1.32e-13	1.26e-13	1.17e-13	1.12e-13	1.15e-13
Sb-122	2.84e-14	2.69e-14	2.55e-14	2.43e-14	2.24e-14	2.14e-14	2.21e-14
Sb-122m	2.66e-15	2.29e-15	1.96e-15	1.89e-15	1.49e-15	1.32e-15	1.45e-15
Sb-124	1.12e-13	1.08e-13	1.03e-13	9.82e-14	9.17e-14	8.81e-14	9.06e-14
Sb-124m	2.63e-14	2.49e-14	2.37e-14	2.25e-14	2.07e-14	1.98e-14	2.05e-14
Sb-124n	1.26e-20	8.57e-21	7.20e-21	6.61e-21	4.60e-21	4.02e-21	4.63e-21
Sb-125	2.54e-14	2.38e-14	2.25e-14	2.14e-14	1.96e-14	1.88e-14	1.94e-14
Sb-126	1.64e-13	1.56e-13	1.48e-13	1.41e-13	1.30e-13	1.24e-13	1.28e-13
Sb-126m	9.40e-14	8.92e-14	8.45e-14	8.03e-14	7.40e-14	7.08e-14	7.31e-14
Sb-127	4.19e-14	3.98e-14	3.76e-14	3.58e-14	3.30e-14	3.15e-14	3.26e-14
Sb-128	1.85e-13	1.76e-13	1.67e-13	1.59e-13	1.46e-13	1.40e-13	1.45e-13
Sb-128m	1.17e-13	1.12e-13	1.05e-13	1.00e-13	9.26e-14	8.86e-14	9.15e-14
Sb-129	8.85e-14	8.49e-14	8.06e-14	7.69e-14	7.14e-14	6.85e-14	7.06e-14
Sb-130	1.98e-13	1.89e-13	1.78e-13	1.70e-13	1.57e-13	1.51e-13	1.56e-13
Sb-130m	1.65e-13	1.59e-13	1.50e-13	1.43e-13	1.33e-13	1.27e-13	1.31e-13
Sb-131	1.26e-13	1.22e-13	1.16e-13	1.10e-13	1.03e-13	9.89e-14	1.02e-13
Sb-133	1.68e-13	1.62e-13	1.55e-13	1.48e-13	1.39e-13	1.33e-13	1.37e-13
Tellurium							
Te-113	1.42e-13	1.35e-13	1.29e-13	1.23e-13	1.14e-13	1.10e-13	1.13e-13
Te-114	7.59e-14	7.25e-14	6.89e-14	6.58e-14	6.12e-14	5.88e-14	6.05e-14
Te-115	1.37e-13	1.31e-13	1.24e-13	1.19e-13	1.10e-13	1.06e-13	1.09e-13
Te-115m	1.58e-13	1.52e-13	1.44e-13	1.38e-13	1.28e-13	1.23e-13	1.27e-13
Te-116	5.23e-15	4.70e-15	4.35e-15	4.11e-15	3.65e-15	3.48e-15	3.63e-15
Te-117	9.29e-14	8.89e-14	8.47e-14	8.09e-14	7.53e-14	7.23e-14	7.44e-14
Te-118	3.30e-16	2.29e-16	1.91e-16	1.76e-16	1.25e-16	1.09e-16	1.25e-16
Te-119	4.47e-14	4.25e-14	4.03e-14	3.84e-14	3.54e-14	3.39e-14	3.50e-14
Te-119m	8.92e-14	8.55e-14	8.09e-14	7.73e-14	7.18e-14	6.89e-14	7.10e-14
Te-121	3.32e-14	3.13e-14	2.97e-14	2.82e-14	2.59e-14	2.47e-14	2.56e-14
Te-121m	1.23e-14	1.14e-14	1.05e-14	9.98e-15	9.10e-15	8.75e-15	9.06e-15

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Te-123	5.73e-19	3.98e-19	3.32e-19	3.06e-19	2.17e-19	1.90e-19	2.17e-19
Te-123m	8.15e-15	7.37e-15	6.84e-15	6.56e-15	5.83e-15	5.64e-15	5.85e-15
Te-125m	6.91e-16	4.98e-16	4.16e-16	3.85e-16	2.83e-16	2.52e-16	2.84e-16
Te-127	8.88e-16	8.52e-16	8.11e-16	7.78e-16	7.27e-16	7.01e-16	7.20e-16
Te-127m	2.35e-16	1.75e-16	1.49e-16	1.39e-16	1.06e-16	9.54e-17	1.06e-16
Te-129	5.33e-15	5.05e-15	4.79e-15	4.57e-15	4.23e-15	4.07e-15	4.19e-15
Te-129m	2.68e-15	2.53e-15	2.39e-15	2.28e-15	2.10e-15	2.01e-15	2.08e-15
Te-131	2.74e-14	2.59e-14	2.44e-14	2.33e-14	2.14e-14	2.06e-14	2.13e-14
Te-131m	8.67e-14	8.29e-14	7.84e-14	7.48e-14	6.92e-14	6.64e-14	6.85e-14
Te-132	1.31e-14	1.19e-14	1.09e-14	1.04e-14	9.42e-15	9.04e-15	9.38e-15
Te-133	7.46e-14	7.12e-14	6.75e-14	6.45e-14	6.01e-14	5.77e-14	5.94e-14
Te-133m	1.12e-13	1.07e-13	1.02e-13	9.69e-14	8.99e-14	8.62e-14	8.89e-14
Te-134	5.16e-14	4.87e-14	4.58e-14	4.36e-14	4.00e-14	3.83e-14	3.96e-14
Iodine							
I-118	1.31e-13	1.24e-13	1.18e-13	1.12e-13	1.04e-13	9.95e-14	1.03e-13
I-118m	2.27e-13	2.16e-13	2.05e-13	1.95e-13	1.80e-13	1.73e-13	1.78e-13
I-119	5.55e-14	5.21e-14	4.91e-14	4.67e-14	4.29e-14	4.11e-14	4.25e-14
I-120	1.66e-13	1.59e-13	1.52e-13	1.45e-13	1.36e-13	1.30e-13	1.34e-13
I-120m	2.14e-13	2.04e-13	1.94e-13	1.85e-13	1.71e-13	1.64e-13	1.69e-13
I-121	2.30e-14	2.14e-14	2.00e-14	1.90e-14	1.74e-14	1.66e-14	1.72e-14
I-122	6.18e-14	5.84e-14	5.55e-14	5.28e-14	4.86e-14	4.65e-14	4.80e-14
I-123	9.20e-15	8.32e-15	7.73e-15	7.40e-15	6.58e-15	6.35e-15	6.60e-15
I-124	6.64e-14	6.32e-14	6.02e-14	5.74e-14	5.32e-14	5.10e-14	5.26e-14
I-125	7.97e-16	5.68e-16	4.71e-16	4.35e-16	3.14e-16	2.78e-16	3.15e-16
I-126	2.58e-14	2.43e-14	2.30e-14	2.19e-14	2.01e-14	1.92e-14	1.99e-14
I-128	6.91e-15	6.58e-15	6.25e-15	5.97e-15	5.54e-15	5.33e-15	5.49e-15
I-129	6.18e-16	4.70e-16	3.93e-16	3.64e-16	2.81e-16	2.54e-16	2.81e-16
I-130	1.27e-13	1.21e-13	1.15e-13	1.09e-13	1.00e-13	9.61e-14	9.93e-14
I-130m	6.90e-15	6.52e-15	6.19e-15	5.89e-15	5.43e-15	5.20e-15	5.37e-15
I-131	2.31e-14	2.15e-14	2.02e-14	1.92e-14	1.76e-14	1.69e-14	1.75e-14
I-132	1.36e-13	1.30e-13	1.23e-13	1.18e-13	1.09e-13	1.04e-13	1.07e-13
I-132m	2.00e-14	1.89e-14	1.79e-14	1.70e-14	1.56e-14	1.50e-14	1.55e-14
I-133	3.76e-14	3.56e-14	3.38e-14	3.21e-14	2.96e-14	2.83e-14	2.92e-14
I-134	1.57e-13	1.50e-13	1.42e-13	1.36e-13	1.26e-13	1.21e-13	1.25e-13

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
I-134m	1.63e-14	1.50e-14	1.39e-14	1.32e-14	1.21e-14	1.16e-14	1.20e-14
I-135	9.61e-14	9.26e-14	8.81e-14	8.43e-14	7.88e-14	7.58e-14	7.79e-14
Xenon							
Xe-120	2.21e-14	2.07e-14	1.94e-14	1.85e-14	1.69e-14	1.61e-14	1.67e-14
Xe-121	9.03e-14	8.60e-14	8.20e-14	7.84e-14	7.31e-14	7.02e-14	7.22e-14
Xe-122	3.12e-15	2.79e-15	2.58e-15	2.45e-15	2.18e-15	2.08e-15	2.17e-15
Xe-123	3.78e-14	3.57e-14	3.37e-14	3.22e-14	2.97e-14	2.85e-14	2.94e-14
Xe-125	1.49e-14	1.37e-14	1.26e-14	1.20e-14	1.09e-14	1.05e-14	1.09e-14
Xe-127	1.56e-14	1.43e-14	1.32e-14	1.26e-14	1.14e-14	1.09e-14	1.13e-14
Xe-127m	9.39e-15	8.42e-15	7.79e-15	7.41e-15	6.59e-15	6.38e-15	6.63e-15
Xe-129m	1.54e-15	1.25e-15	1.09e-15	1.02e-15	8.47e-16	7.91e-16	8.47e-16
Xe-131m	5.95e-16	4.81e-16	4.21e-16	3.98e-16	3.29e-16	3.08e-16	3.30e-16
Xe-133	2.18e-15	1.90e-15	1.68e-15	1.61e-15	1.34e-15	1.22e-15	1.31e-15
Xe-133m	1.85e-15	1.64e-15	1.49e-15	1.41e-15	1.26e-15	1.21e-15	1.26e-15
Xe-135	1.56e-14	1.45e-14	1.34e-14	1.28e-14	1.17e-14	1.13e-14	1.17e-14
Xe-135m	2.50e-14	2.35e-14	2.23e-14	2.12e-14	1.95e-14	1.86e-14	1.92e-14
Xe-137	1.99e-14	1.91e-14	1.81e-14	1.74e-14	1.62e-14	1.56e-14	1.60e-14
Xe-138	7.03e-14	6.74e-14	6.43e-14	6.17e-14	5.79e-14	5.58e-14	5.73e-14
Cesium							
Cs-121	7.83e-14	7.39e-14	7.01e-14	6.67e-14	6.15e-14	5.89e-14	6.08e-14
Cs-121m	7.64e-14	7.20e-14	6.81e-14	6.49e-14	5.97e-14	5.72e-14	5.91e-14
Cs-123	6.79e-14	6.40e-14	6.07e-14	5.77e-14	5.31e-14	5.08e-14	5.25e-14
Cs-124	7.97e-14	7.54e-14	7.16e-14	6.82e-14	6.30e-14	6.04e-14	6.23e-14
Cs-125	4.55e-14	4.29e-14	4.07e-14	3.87e-14	3.56e-14	3.41e-14	3.52e-14
Cs-126	7.46e-14	7.05e-14	6.69e-14	6.36e-14	5.86e-14	5.62e-14	5.80e-14
Cs-127	2.48e-14	2.31e-14	2.17e-14	2.06e-14	1.89e-14	1.81e-14	1.87e-14
Cs-128	5.63e-14	5.31e-14	5.04e-14	4.80e-14	4.41e-14	4.22e-14	4.36e-14
Cs-129	1.53e-14	1.41e-14	1.33e-14	1.26e-14	1.15e-14	1.10e-14	1.14e-14
Cs-130	3.07e-14	2.89e-14	2.75e-14	2.61e-14	2.40e-14	2.30e-14	2.38e-14
Cs-130m	3.02e-15	2.61e-15	2.31e-15	2.20e-15	1.83e-15	1.69e-15	1.81e-15
Cs-131	4.89e-16	3.58e-16	2.94e-16	2.72e-16	2.01e-16	1.79e-16	2.01e-16
Cs-132	4.15e-14	3.93e-14	3.72e-14	3.54e-14	3.26e-14	3.11e-14	3.22e-14
Cs-134	9.25e-14	8.82e-14	8.36e-14	7.95e-14	7.33e-14	7.02e-14	7.25e-14
Cs-134m	1.20e-15	1.04e-15	9.54e-16	9.03e-16	7.85e-16	7.56e-16	7.91e-16

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Cs-135	1.47e-16	1.43e-16	1.36e-16	1.31e-16	1.23e-16	1.19e-16	1.22e-16
Cs-135m	9.48e-14	9.09e-14	8.60e-14	8.18e-14	7.56e-14	7.24e-14	7.47e-14
Cs-136	1.27e-13	1.22e-13	1.15e-13	1.09e-13	1.01e-13	9.71e-14	1.00e-13
Cs-137	4.76e-16	4.62e-16	4.42e-16	4.26e-16	4.02e-16	3.89e-16	3.98e-16
Cs-138	1.48e-13	1.43e-13	1.36e-13	1.30e-13	1.22e-13	1.18e-13	1.21e-13
Cs-138m	2.55e-14	2.43e-14	2.31e-14	2.20e-14	2.05e-14	1.97e-14	2.03e-14
Cs-139	2.68e-14	2.60e-14	2.48e-14	2.38e-14	2.24e-14	2.16e-14	2.22e-14
Cs-140	1.19e-13	1.14e-13	1.09e-13	1.05e-13	9.88e-14	9.52e-14	9.76e-14
Barium							
Ba-124	3.36e-14	3.17e-14	2.99e-14	2.85e-14	2.62e-14	2.51e-14	2.59e-14
Ba-126	3.36e-14	3.18e-14	2.99e-14	2.85e-14	2.63e-14	2.52e-14	2.60e-14
Ba-127	4.50e-14	4.24e-14	4.02e-14	3.83e-14	3.53e-14	3.38e-14	3.49e-14
Ba-128	3.05e-15	2.72e-15	2.47e-15	2.34e-15	2.09e-15	2.00e-15	2.09e-15
Ba-129	1.94e-14	1.82e-14	1.72e-14	1.64e-14	1.51e-14	1.44e-14	1.49e-14
Ba-129m	9.33e-14	8.88e-14	8.40e-14	8.01e-14	7.41e-14	7.11e-14	7.33e-14
Ba-131	2.70e-14	2.51e-14	2.36e-14	2.24e-14	2.04e-14	1.96e-14	2.03e-14
Ba-131m	4.00e-15	3.49e-15	3.20e-15	2.99e-15	2.62e-15	2.53e-15	2.65e-15
Ba-133	2.22e-14	2.04e-14	1.90e-14	1.80e-14	1.63e-14	1.56e-14	1.62e-14
Ba-133m	3.48e-15	3.15e-15	2.89e-15	2.74e-15	2.48e-15	2.38e-15	2.47e-15
Ba-135m	3.03e-15	2.73e-15	2.50e-15	2.38e-15	2.15e-15	2.05e-15	2.13e-15
Ba-137m	3.52e-14	3.35e-14	3.17e-14	3.02e-14	2.78e-14	2.66e-14	2.75e-14
Ba-139	6.33e-15	6.00e-15	5.67e-15	5.45e-15	5.05e-15	4.88e-15	5.02e-15
Ba-140	1.14e-14	1.07e-14	1.01e-14	9.62e-15	8.82e-15	8.45e-15	8.74e-15
Ba-141	5.92e-14	5.62e-14	5.30e-14	5.06e-14	4.69e-14	4.50e-14	4.64e-14
Ba-142	6.34e-14	6.07e-14	5.73e-14	5.46e-14	5.06e-14	4.85e-14	5.00e-14
Lanthanum							
La-128	1.74e-13	1.66e-13	1.57e-13	1.50e-13	1.38e-13	1.33e-13	1.37e-13
La-129	5.65e-14	5.31e-14	5.02e-14	4.77e-14	4.38e-14	4.20e-14	4.34e-14
La-130	1.38e-13	1.31e-13	1.24e-13	1.19e-13	1.10e-13	1.05e-13	1.08e-13
La-131	3.90e-14	3.64e-14	3.43e-14	3.26e-14	2.99e-14	2.86e-14	2.96e-14
La-132	1.21e-13	1.16e-13	1.10e-13	1.05e-13	9.79e-14	9.40e-14	9.68e-14
La-132m	3.93e-14	3.70e-14	3.49e-14	3.32e-14	3.04e-14	2.91e-14	3.01e-14
La-133	8.71e-15	8.10e-15	7.61e-15	7.22e-15	6.59e-15	6.29e-15	6.52e-15
La-134	4.56e-14	4.30e-14	4.08e-14	3.88e-14	3.57e-14	3.42e-14	3.53e-14

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
La-135	1.23e-15	1.04e-15	9.22e-16	8.66e-16	7.37e-16	6.89e-16	7.32e-16
La-136	2.46e-14	2.31e-14	2.19e-14	2.08e-14	1.91e-14	1.83e-14	1.89e-14
La-137	6.04e-16	4.54e-16	3.72e-16	3.43e-16	2.59e-16	2.33e-16	2.60e-16
La-138	7.35e-14	7.08e-14	6.73e-14	6.43e-14	6.01e-14	5.77e-14	5.94e-14
La-140	1.41e-13	1.35e-13	1.29e-13	1.23e-13	1.15e-13	1.11e-13	1.14e-13
La-141	5.81e-15	5.63e-15	5.38e-15	5.17e-15	4.87e-15	4.70e-15	4.82e-15
La-142	1.48e-13	1.43e-13	1.37e-13	1.32e-13	1.24e-13	1.20e-13	1.23e-13
La-143	2.19e-14	2.12e-14	2.02e-14	1.94e-14	1.82e-14	1.75e-14	1.80e-14
Cerium							
Ce-130	2.86e-14	2.68e-14	2.51e-14	2.39e-14	2.19e-14	2.10e-14	2.17e-14
Ce-131	9.85e-14	9.35e-14	8.86e-14	8.45e-14	7.81e-14	7.49e-14	7.73e-14
Ce-132	1.52e-14	1.39e-14	1.28e-14	1.22e-14	1.10e-14	1.06e-14	1.10e-14
Ce-133	3.18e-14	2.96e-14	2.79e-14	2.64e-14	2.41e-14	2.30e-14	2.38e-14
Ce-133m	1.02e-13	9.76e-14	9.26e-14	8.83e-14	8.19e-14	7.86e-14	8.10e-14
Ce-134	7.73e-16	6.03e-16	5.03e-16	4.66e-16	3.65e-16	3.34e-16	3.66e-16
Ce-135	4.79e-14	4.50e-14	4.23e-14	4.03e-14	3.70e-14	3.54e-14	3.66e-14
Ce-137	1.34e-15	1.14e-15	1.01e-15	9.46e-16	8.06e-16	7.54e-16	8.01e-16
Ce-137m	2.75e-15	2.47e-15	2.25e-15	2.14e-15	1.92e-15	1.83e-15	1.91e-15
Ce-139	8.49e-15	7.63e-15	7.03e-15	6.72e-15	5.97e-15	5.75e-15	5.98e-15
Ce-141	4.66e-15	4.22e-15	3.93e-15	3.76e-15	3.34e-15	3.24e-15	3.36e-15
Ce-143	1.71e-14	1.60e-14	1.49e-14	1.42e-14	1.30e-14	1.24e-14	1.28e-14
Ce-144	1.17e-15	1.05e-15	9.71e-16	9.25e-16	8.18e-16	7.88e-16	8.21e-16
Ce-145	4.96e-14	4.71e-14	4.44e-14	4.23e-14	3.90e-14	3.73e-14	3.85e-14
Praseodymium							
Pr-134	1.92e-13	1.82e-13	1.72e-13	1.64e-13	1.52e-13	1.45e-13	1.50e-13
Pr-134m	1.46e-13	1.39e-13	1.32e-13	1.26e-13	1.17e-13	1.12e-13	1.15e-13
Pr-135	5.32e-14	5.01e-14	4.73e-14	4.50e-14	4.14e-14	3.96e-14	4.09e-14
Pr-136	1.31e-13	1.25e-13	1.19e-13	1.13e-13	1.05e-13	1.01e-13	1.04e-13
Pr-137	2.19e-14	2.06e-14	1.95e-14	1.86e-14	1.71e-14	1.63e-14	1.69e-14
Pr-138	5.35e-14	5.05e-14	4.80e-14	4.57e-14	4.20e-14	4.03e-14	4.16e-14
Pr-138m	1.47e-13	1.41e-13	1.33e-13	1.26e-13	1.17e-13	1.12e-13	1.16e-13
Pr-139	7.01e-15	6.50e-15	6.11e-15	5.80e-15	5.28e-15	5.04e-15	5.23e-15
Pr-140	3.42e-14	3.22e-14	3.05e-14	2.90e-14	2.66e-14	2.55e-14	2.64e-14
Pr-142	6.80e-15	6.58e-15	6.29e-15	6.04e-15	5.69e-15	5.49e-15	5.63e-15

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Pr-143	9.51e-16	9.24e-16	8.84e-16	8.51e-16	8.03e-16	7.77e-16	7.95e-16
Pr-144	7.21e-15	6.98e-15	6.68e-15	6.42e-15	6.05e-15	5.84e-15	5.98e-15
Pr-144m	4.26e-16	3.49e-16	2.99e-16	2.78e-16	2.29e-16	2.12e-16	2.28e-16
Pr-145	3.67e-15	3.54e-15	3.38e-15	3.24e-15	3.04e-15	2.93e-15	3.01e-15
Pr-146	6.71e-14	6.44e-14	6.13e-14	5.87e-14	5.48e-14	5.27e-14	5.42e-14
Pr-147	3.13e-14	2.95e-14	2.78e-14	2.65e-14	2.44e-14	2.34e-14	2.42e-14
Pr-148	6.79e-14	6.50e-14	6.17e-14	5.90e-14	5.51e-14	5.30e-14	5.45e-14
Pr-148m	6.38e-14	6.04e-14	5.70e-14	5.43e-14	5.02e-14	4.82e-14	4.97e-14
Neodymium							
Nd-134	3.18e-14	2.96e-14	2.77e-14	2.64e-14	2.40e-14	2.31e-14	2.39e-14
Nd-135	7.83e-14	7.35e-14	6.95e-14	6.61e-14	6.07e-14	5.82e-14	6.01e-14
Nd-136	1.52e-14	1.40e-14	1.31e-14	1.24e-14	1.12e-14	1.07e-14	1.11e-14
Nd-137	7.02e-14	6.66e-14	6.31e-14	6.01e-14	5.55e-14	5.32e-14	5.49e-14
Nd-138	1.70e-15	1.45e-15	1.28e-15	1.20e-15	1.03e-15	9.64e-16	1.02e-15
Nd-139	2.64e-14	2.48e-14	2.35e-14	2.23e-14	2.05e-14	1.97e-14	2.03e-14
Nd-139m	9.32e-14	8.90e-14	8.41e-14	8.01e-14	7.41e-14	7.10e-14	7.33e-14
Nd-140	8.30e-16	6.46e-16	5.30e-16	4.86e-16	3.77e-16	3.42e-16	3.78e-16
Nd-141	3.70e-15	3.38e-15	3.12e-15	2.95e-15	2.66e-15	2.53e-15	2.64e-15
Nd-141m	4.12e-14	3.93e-14	3.72e-14	3.54e-14	3.27e-14	3.13e-14	3.23e-14
Nd-147	8.39e-15	7.74e-15	7.23e-15	6.85e-15	6.20e-15	5.91e-15	6.14e-15
Nd-149	2.32e-14	2.16e-14	2.02e-14	1.92e-14	1.75e-14	1.68e-14	1.74e-14
Nd-151	5.28e-14	5.02e-14	4.74e-14	4.52e-14	4.18e-14	4.01e-14	4.14e-14
Nd-152	1.06e-14	9.85e-15	9.16e-15	8.72e-15	8.01e-15	7.69e-15	7.95e-15
Promethium							
Pm-136	1.73e-13	1.64e-13	1.56e-13	1.48e-13	1.37e-13	1.31e-13	1.35e-13
Pm-137m	1.10e-13	1.03e-13	9.77e-14	9.29e-14	8.55e-14	8.19e-14	8.46e-14
Pm-139	6.03e-14	5.69e-14	5.40e-14	5.14e-14	4.74e-14	4.54e-14	4.69e-14
Pm-140	7.37e-14	6.98e-14	6.63e-14	6.32e-14	5.83e-14	5.59e-14	5.77e-14
Pm-140m	1.84e-13	1.76e-13	1.66e-13	1.58e-13	1.46e-13	1.40e-13	1.44e-13
Pm-141	4.58e-14	4.34e-14	4.12e-14	3.92e-14	3.62e-14	3.47e-14	3.58e-14
Pm-142	5.70e-14	5.39e-14	5.12e-14	4.87e-14	4.49e-14	4.30e-14	4.44e-14
Pm-143	1.78e-14	1.69e-14	1.59e-14	1.51e-14	1.39e-14	1.32e-14	1.37e-14
Pm-144	9.16e-14	8.67e-14	8.22e-14	7.81e-14	7.18e-14	6.86e-14	7.09e-14
Pm-145	9.85e-16	7.85e-16	6.48e-16	5.97e-16	4.68e-16	4.23e-16	4.66e-16

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Pm-146	4.41e-14	4.17e-14	3.94e-14	3.75e-14	3.44e-14	3.29e-14	3.40e-14
Pm-147	8.02e-17	7.76e-17	7.38e-17	7.08e-17	6.63e-17	6.39e-17	6.56e-17
Pm-148	3.73e-14	3.58e-14	3.41e-14	3.26e-14	3.04e-14	2.92e-14	3.00e-14
Pm-148m	1.18e-13	1.12e-13	1.06e-13	1.01e-13	9.30e-14	8.90e-14	9.19e-14
Pm-149	1.86e-15	1.78e-15	1.68e-15	1.61e-15	1.51e-15	1.45e-15	1.49e-15
Pm-150	9.13e-14	8.75e-14	8.30e-14	7.93e-14	7.39e-14	7.10e-14	7.31e-14
Pm-151	2.00e-14	1.86e-14	1.74e-14	1.66e-14	1.52e-14	1.45e-14	1.50e-14
Pm-152	2.32e-14	2.22e-14	2.11e-14	2.02e-14	1.88e-14	1.81e-14	1.86e-14
Pm-152m	9.38e-14	8.95e-14	8.45e-14	8.06e-14	7.48e-14	7.18e-14	7.40e-14
Pm-153	6.66e-15	6.15e-15	5.75e-15	5.49e-15	4.99e-15	4.81e-15	4.98e-15
Pm-154	1.11e-13	1.07e-13	1.02e-13	9.82e-14	9.21e-14	8.86e-14	9.10e-14
Pm-154m	1.11e-13	1.06e-13	1.01e-13	9.64e-14	8.98e-14	8.63e-14	8.88e-14
Samarium							
Sm-139	9.11e-14	8.61e-14	8.15e-14	7.76e-14	7.16e-14	6.87e-14	7.09e-14
Sm-140	3.36e-14	3.17e-14	3.00e-14	2.85e-14	2.63e-14	2.52e-14	2.60e-14
Sm-141	8.66e-14	8.21e-14	7.79e-14	7.43e-14	6.87e-14	6.59e-14	6.80e-14
Sm-141m	1.17e-13	1.11e-13	1.05e-13	1.00e-13	9.28e-14	8.90e-14	9.18e-14
Sm-142	5.86e-15	5.39e-15	5.02e-15	4.75e-15	4.29e-15	4.09e-15	4.25e-15
Sm-143	3.29e-14	3.10e-14	2.94e-14	2.79e-14	2.57e-14	2.46e-14	2.54e-14
Sm-143m	4.06e-14	3.87e-14	3.67e-14	3.49e-14	3.22e-14	3.08e-14	3.18e-14
Sm-145	2.15e-15	1.74e-15	1.44e-15	1.33e-15	1.05e-15	9.48e-16	1.04e-15
Sm-151	8.16e-18	7.85e-18	7.42e-18	7.07e-18	6.56e-18	6.28e-18	6.48e-18
Sm-153	3.69e-15	3.25e-15	2.94e-15	2.75e-15	2.41e-15	2.29e-15	2.41e-15
Sm-155	7.88e-15	7.16e-15	6.66e-15	6.28e-15	5.67e-15	5.47e-15	5.68e-15
Sm-156	6.94e-15	6.33e-15	5.81e-15	5.54e-15	4.97e-15	4.76e-15	4.95e-15
Sm-157	2.79e-14	2.63e-14	2.47e-14	2.35e-14	2.17e-14	2.09e-14	2.16e-14
Europium							
Eu-142	8.96e-14	8.52e-14	8.11e-14	7.74e-14	7.18e-14	6.89e-14	7.10e-14
Eu-142m	2.13e-13	2.03e-13	1.92e-13	1.83e-13	1.69e-13	1.62e-13	1.67e-13
Eu-143	7.36e-14	6.99e-14	6.65e-14	6.34e-14	5.87e-14	5.63e-14	5.80e-14
Eu-144	7.68e-14	7.28e-14	6.93e-14	6.61e-14	6.12e-14	5.87e-14	6.05e-14
Eu-145	7.58e-14	7.27e-14	6.90e-14	6.59e-14	6.14e-14	5.89e-14	6.06e-14
Eu-146	1.42e-13	1.36e-13	1.29e-13	1.23e-13	1.14e-13	1.09e-13	1.12e-13
Eu-147	2.70e-14	2.54e-14	2.38e-14	2.26e-14	2.07e-14	1.98e-14	2.05e-14

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Eu-148	1.31e-13	1.25e-13	1.18e-13	1.13e-13	1.04e-13	9.95e-14	1.03e-13
Eu-149	3.01e-15	2.66e-15	2.39e-15	2.24e-15	1.97e-15	1.86e-15	1.96e-15
Eu-150	9.14e-14	8.61e-14	8.13e-14	7.73e-14	7.11e-14	6.81e-14	7.04e-14
Eu-150m	3.81e-15	3.60e-15	3.40e-15	3.24e-15	3.00e-15	2.88e-15	2.97e-15
Eu-152	6.96e-14	6.65e-14	6.28e-14	5.99e-14	5.55e-14	5.33e-14	5.49e-14
Eu-152m	1.92e-14	1.84e-14	1.74e-14	1.66e-14	1.53e-14	1.47e-14	1.52e-14
Eu-152n	3.90e-15	3.43e-15	3.08e-15	2.90e-15	2.48e-15	2.33e-15	2.47e-15
Eu-154	7.49e-14	7.18e-14	6.79e-14	6.48e-14	6.01e-14	5.76e-14	5.94e-14
Eu-154m	3.23e-15	2.81e-15	2.49e-15	2.35e-15	1.96e-15	1.82e-15	1.94e-15
Eu-155	3.27e-15	2.87e-15	2.59e-15	2.44e-15	2.10e-15	1.98e-15	2.09e-15
Eu-156	7.57e-14	7.30e-14	6.95e-14	6.65e-14	6.23e-14	5.98e-14	6.15e-14
Eu-157	1.76e-14	1.64e-14	1.53e-14	1.45e-14	1.32e-14	1.26e-14	1.31e-14
Eu-158	8.08e-14	7.78e-14	7.38e-14	7.05e-14	6.56e-14	6.29e-14	6.48e-14
Eu-159	2.02e-14	1.91e-14	1.78e-14	1.70e-14	1.55e-14	1.48e-14	1.53e-14
Gadolinium							
Gd-142	6.50e-14	6.16e-14	5.84e-14	5.56e-14	5.14e-14	4.93e-14	5.09e-14
Gd-143m	1.32e-13	1.25e-13	1.18e-13	1.13e-13	1.04e-13	1.00e-13	1.03e-13
Gd-144	5.65e-14	5.37e-14	5.12e-14	4.89e-14	4.54e-14	4.36e-14	4.49e-14
Gd-145	1.48e-13	1.42e-13	1.36e-13	1.30e-13	1.23e-13	1.18e-13	1.21e-13
Gd-145m	4.06e-14	3.86e-14	3.66e-14	3.48e-14	3.21e-14	3.07e-14	3.17e-14
Gd-146	1.30e-14	1.14e-14	1.04e-14	9.80e-15	8.57e-15	8.22e-15	8.61e-15
Gd-147	8.25e-14	7.82e-14	7.36e-14	7.00e-14	6.46e-14	6.18e-14	6.39e-14
Gd-149	3.02e-14	2.81e-14	2.63e-14	2.50e-14	2.28e-14	2.18e-14	2.26e-14
Gd-151	3.23e-15	2.83e-15	2.52e-15	2.37e-15	2.07e-15	1.95e-15	2.06e-15
Gd-153	4.90e-15	4.19e-15	3.71e-15	3.44e-15	2.93e-15	2.77e-15	2.94e-15
Gd-159	3.89e-15	3.62e-15	3.38e-15	3.21e-15	2.94e-15	2.81e-15	2.91e-15
Gd-162	2.55e-14	2.39e-14	2.26e-14	2.14e-14	1.97e-14	1.88e-14	1.95e-14
Terbium							
Tb-146	2.26e-13	2.17e-13	2.07e-13	1.98e-13	1.85e-13	1.78e-13	1.83e-13
Tb-147	1.31e-13	1.25e-13	1.19e-13	1.14e-13	1.05e-13	1.01e-13	1.04e-13
Tb-147m	1.16e-13	1.11e-13	1.06e-13	1.01e-13	9.48e-14	9.11e-14	9.36e-14
Tb-148	1.45e-13	1.39e-13	1.32e-13	1.26e-13	1.17e-13	1.12e-13	1.15e-13
Tb-148m	1.87e-13	1.78e-13	1.68e-13	1.60e-13	1.47e-13	1.41e-13	1.46e-13
Tb-149	8.09e-14	7.70e-14	7.30e-14	6.97e-14	6.47e-14	6.21e-14	6.40e-14

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Tb-149m	8.16e-14	7.77e-14	7.35e-14	6.99e-14	6.44e-14	6.16e-14	6.36e-14
Tb-150	1.48e-13	1.42e-13	1.36e-13	1.30e-13	1.22e-13	1.17e-13	1.20e-13
Tb-150m	1.49e-13	1.41e-13	1.33e-13	1.26e-13	1.16e-13	1.11e-13	1.15e-13
Tb-151	5.78e-14	5.42e-14	5.10e-14	4.84e-14	4.44e-14	4.26e-14	4.40e-14
Tb-151m	4.33e-15	4.03e-15	3.76e-15	3.56e-15	3.24e-15	3.08e-15	3.20e-15
Tb-152	8.99e-14	8.56e-14	8.13e-14	7.77e-14	7.23e-14	6.95e-14	7.15e-14
Tb-152m	4.41e-14	4.11e-14	3.85e-14	3.66e-14	3.34e-14	3.20e-14	3.31e-14
Tb-153	1.85e-14	1.71e-14	1.58e-14	1.50e-14	1.36e-14	1.30e-14	1.35e-14
Tb-154	1.37e-13	1.32e-13	1.26e-13	1.21e-13	1.14e-13	1.10e-13	1.13e-13
Tb-155	9.20e-15	8.17e-15	7.39e-15	6.97e-15	6.12e-15	5.81e-15	6.10e-15
Tb-156	1.14e-13	1.09e-13	1.03e-13	9.84e-14	9.12e-14	8.75e-14	9.02e-14
Tb-156m	1.51e-15	1.27e-15	1.06e-15	9.81e-16	8.00e-16	7.16e-16	7.82e-16
Tb-156n	1.59e-16	1.35e-16	1.16e-16	1.08e-16	8.96e-17	8.22e-17	8.86e-17
Tb-157	1.70e-16	1.39e-16	1.15e-16	1.05e-16	8.50e-17	7.67e-17	8.40e-17
Tb-158	4.70e-14	4.50e-14	4.23e-14	4.03e-14	3.72e-14	3.56e-14	3.68e-14
Tb-160	6.74e-14	6.46e-14	6.10e-14	5.82e-14	5.39e-14	5.16e-14	5.32e-14
Tb-161	1.69e-15	1.48e-15	1.29e-15	1.22e-15	1.03e-15	9.46e-16	1.01e-15
Tb-162	6.72e-14	6.40e-14	6.02e-14	5.73e-14	5.28e-14	5.06e-14	5.23e-14
Tb-163	4.76e-14	4.46e-14	4.20e-14	3.99e-14	3.66e-14	3.51e-14	3.63e-14
Tb-164	1.49e-13	1.42e-13	1.35e-13	1.28e-13	1.19e-13	1.14e-13	1.18e-13
Tb-165	5.37e-14	5.17e-14	4.92e-14	4.71e-14	4.40e-14	4.23e-14	4.35e-14
Dysprosium							
Dy-148	4.17e-14	3.94e-14	3.72e-14	3.54e-14	3.25e-14	3.10e-14	3.21e-14
Dy-149	9.62e-14	9.21e-14	8.73e-14	8.34e-14	7.76e-14	7.45e-14	7.67e-14
Dy-150	1.60e-14	1.48e-14	1.39e-14	1.31e-14	1.20e-14	1.14e-14	1.18e-14
Dy-151	8.10e-14	7.73e-14	7.32e-14	6.98e-14	6.47e-14	6.20e-14	6.39e-14
Dy-152	1.63e-14	1.49e-14	1.36e-14	1.29e-14	1.18e-14	1.13e-14	1.17e-14
Dy-153	5.03e-14	4.74e-14	4.45e-14	4.24e-14	3.90e-14	3.73e-14	3.86e-14
Dy-155	3.89e-14	3.67e-14	3.44e-14	3.28e-14	3.02e-14	2.90e-14	2.99e-14
Dy-157	1.97e-14	1.82e-14	1.68e-14	1.59e-14	1.45e-14	1.39e-14	1.44e-14
Dy-159	1.70e-15	1.41e-15	1.17e-15	1.07e-15	8.69e-16	7.82e-16	8.56e-16
Dy-165	2.96e-15	2.81e-15	2.65e-15	2.53e-15	2.34e-15	2.24e-15	2.31e-15
Dy-165m	1.01e-15	9.18e-16	8.49e-16	8.02e-16	7.20e-16	6.86e-16	7.15e-16
Dy-166	2.16e-15	1.90e-15	1.67e-15	1.58e-15	1.34e-15	1.24e-15	1.32e-15

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Dy-167	3.38e-14	3.17e-14	2.99e-14	2.84e-14	2.61e-14	2.50e-14	2.58e-14
Dy-168	2.41e-14	2.25e-14	2.11e-14	2.01e-14	1.84e-14	1.76e-14	1.82e-14
Holmium							
Ho-150	1.23e-13	1.17e-13	1.11e-13	1.06e-13	9.76e-14	9.35e-14	9.65e-14
Ho-153	6.26e-14	5.90e-14	5.57e-14	5.29e-14	4.87e-14	4.66e-14	4.82e-14
Ho-153m	6.50e-14	6.10e-14	5.76e-14	5.48e-14	5.02e-14	4.81e-14	4.97e-14
Ho-154	1.17e-13	1.11e-13	1.05e-13	9.98e-14	9.22e-14	8.84e-14	9.12e-14
Ho-154m	1.46e-13	1.38e-13	1.30e-13	1.24e-13	1.14e-13	1.09e-13	1.13e-13
Ho-155	3.63e-14	3.41e-14	3.21e-14	3.05e-14	2.81e-14	2.69e-14	2.78e-14
Ho-156	1.28e-13	1.22e-13	1.15e-13	1.10e-13	1.02e-13	9.82e-14	1.01e-13
Ho-157	3.32e-14	3.09e-14	2.88e-14	2.74e-14	2.50e-14	2.39e-14	2.48e-14
Ho-159	2.13e-14	1.94e-14	1.79e-14	1.69e-14	1.52e-14	1.46e-14	1.52e-14
Ho-160	9.96e-14	9.51e-14	8.97e-14	8.54e-14	7.87e-14	7.53e-14	7.78e-14
Ho-161	2.18e-15	1.83e-15	1.56e-15	1.44e-15	1.19e-15	1.08e-15	1.17e-15
Ho-162	8.85e-15	8.24e-15	7.64e-15	7.26e-15	6.59e-15	6.26e-15	6.51e-15
Ho-162m	3.24e-14	3.07e-14	2.88e-14	2.75e-14	2.53e-14	2.42e-14	2.50e-14
Ho-164	1.56e-15	1.36e-15	1.19e-15	1.11e-15	9.53e-16	8.81e-16	9.39e-16
Ho-164m	1.74e-15	1.45e-15	1.22e-15	1.13e-15	9.12e-16	8.17e-16	8.94e-16
Ho-166	4.17e-15	3.99e-15	3.78e-15	3.63e-15	3.37e-15	3.24e-15	3.33e-15
Ho-166m	9.60e-14	9.10e-14	8.58e-14	8.16e-14	7.51e-14	7.18e-14	7.42e-14
Ho-167	2.20e-14	2.04e-14	1.90e-14	1.81e-14	1.65e-14	1.58e-14	1.64e-14
Ho-168	5.49e-14	5.25e-14	4.97e-14	4.73e-14	4.38e-14	4.19e-14	4.32e-14
Ho-168m	2.47e-16	2.07e-16	1.73e-16	1.60e-16	1.30e-16	1.16e-16	1.27e-16
Ho-170	1.04e-13	9.92e-14	9.35e-14	8.91e-14	8.24e-14	7.90e-14	8.15e-14
Erbium							
Er-154	3.35e-15	2.96e-15	2.66e-15	2.49e-15	2.17e-15	2.03e-15	2.14e-15
Er-156	2.69e-15	2.30e-15	1.99e-15	1.86e-15	1.57e-15	1.45e-15	1.55e-15
Er-159	5.67e-14	5.38e-14	5.09e-14	4.85e-14	4.49e-14	4.30e-14	4.44e-14
Er-161	5.80e-14	5.54e-14	5.22e-14	4.97e-14	4.59e-14	4.39e-14	4.53e-14
Er-163	1.60e-15	1.35e-15	1.13e-15	1.05e-15	8.57e-16	7.71e-16	8.40e-16
Er-165	1.48e-15	1.24e-15	1.04e-15	9.58e-16	7.79e-16	6.98e-16	7.63e-16
Er-167m	5.59e-15	5.10e-15	4.67e-15	4.45e-15	4.03e-15	3.87e-15	4.02e-15
Er-169	1.80e-16	1.75e-16	1.67e-16	1.61e-16	1.51e-16	1.46e-16	1.50e-16

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Er-171	2.28e-14	2.11e-14	1.96e-14	1.86e-14	1.70e-14	1.63e-14	1.69e-14
Er-172	3.01e-14	2.82e-14	2.65e-14	2.52e-14	2.30e-14	2.20e-14	2.28e-14
Er-173	5.12e-14	4.84e-14	4.53e-14	4.32e-14	3.96e-14	3.80e-14	3.93e-14
Thulium							
Tm-161	7.62e-14	7.22e-14	6.83e-14	6.53e-14	6.05e-14	5.80e-14	5.98e-14
Tm-162	1.17e-13	1.12e-13	1.07e-13	1.02e-13	9.56e-14	9.19e-14	9.45e-14
Tm-163	7.74e-14	7.39e-14	6.98e-14	6.66e-14	6.18e-14	5.93e-14	6.11e-14
Tm-164	4.83e-14	4.58e-14	4.35e-14	4.14e-14	3.83e-14	3.67e-14	3.79e-14
Tm-165	3.22e-14	3.00e-14	2.80e-14	2.66e-14	2.43e-14	2.32e-14	2.40e-14
Tm-166	1.18e-13	1.13e-13	1.07e-13	1.03e-13	9.57e-14	9.19e-14	9.46e-14
Tm-167	7.82e-15	7.03e-15	6.34e-15	6.01e-15	5.35e-15	5.07e-15	5.30e-15
Tm-168	7.27e-14	6.88e-14	6.47e-14	6.16e-14	5.66e-14	5.41e-14	5.59e-14
Tm-170	1.15e-15	1.10e-15	1.04e-15	9.97e-16	9.25e-16	8.89e-16	9.15e-16
Tm-171	3.94e-17	3.53e-17	3.11e-17	2.96e-17	2.53e-17	2.32e-17	2.47e-17
Tm-172	3.01e-14	2.90e-14	2.76e-14	2.64e-14	2.47e-14	2.37e-14	2.44e-14
Tm-173	2.37e-14	2.22e-14	2.09e-14	1.99e-14	1.82e-14	1.74e-14	1.80e-14
Tm-174	1.07e-13	1.01e-13	9.49e-14	9.04e-14	8.33e-14	7.98e-14	8.24e-14
Tm-175	6.57e-14	6.25e-14	5.92e-14	5.64e-14	5.21e-14	4.98e-14	5.14e-14
Tm-176	1.22e-13	1.17e-13	1.11e-13	1.06e-13	9.89e-14	9.51e-14	9.78e-14
Ytterbium							
Yb-162	1.40e-14	1.28e-14	1.18e-14	1.12e-14	1.00e-14	9.58e-15	9.97e-15
Yb-163	4.35e-14	4.13e-14	3.91e-14	3.73e-14	3.44e-14	3.29e-14	3.40e-14
Yb-164	2.42e-15	2.12e-15	1.85e-15	1.74e-15	1.47e-15	1.35e-15	1.44e-15
Yb-165	1.86e-14	1.73e-14	1.60e-14	1.53e-14	1.38e-14	1.31e-14	1.36e-14
Yb-166	3.68e-15	3.15e-15	2.68e-15	2.52e-15	2.06e-15	1.84e-15	2.00e-15
Yb-167	1.40e-14	1.24e-14	1.12e-14	1.06e-14	9.23e-15	8.75e-15	9.20e-15
Yb-169	1.71e-14	1.53e-14	1.37e-14	1.30e-14	1.14e-14	1.07e-14	1.13e-14
Yb-175	2.55e-15	2.37e-15	2.22e-15	2.11e-15	1.93e-15	1.85e-15	1.91e-15
Yb-177	1.29e-14	1.23e-14	1.16e-14	1.11e-14	1.02e-14	9.82e-15	1.01e-14
Yb-178	2.72e-15	2.55e-15	2.40e-15	2.29e-15	2.11e-15	2.02e-15	2.09e-15
Yb-179	5.98e-14	5.65e-14	5.36e-14	5.09e-14	4.68e-14	4.48e-14	4.63e-14
Lutetium							
Lu-165	6.63e-14	6.27e-14	5.93e-14	5.65e-14	5.22e-14	5.00e-14	5.16e-14
Lu-167	1.01e-13	9.63e-14	9.15e-14	8.76e-14	8.18e-14	7.85e-14	8.08e-14

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Lu-169	7.76e-14	7.43e-14	7.02e-14	6.71e-14	6.23e-14	5.97e-14	6.15e-14
Lu-169m	2.12e-19	1.04e-19	9.20e-20	8.60e-20	2.47e-20	2.13e-20	3.42e-20
Lu-170	1.55e-13	1.49e-13	1.42e-13	1.37e-13	1.28e-13	1.24e-13	1.27e-13
Lu-171	3.69e-14	3.49e-14	3.28e-14	3.12e-14	2.85e-14	2.72e-14	2.82e-14
Lu-171m	1.46e-17	1.27e-17	1.09e-17	1.05e-17	8.36e-18	7.41e-18	8.09e-18
Lu-172	1.15e-13	1.11e-13	1.04e-13	9.96e-14	9.22e-14	8.83e-14	9.11e-14
Lu-172m	1.26e-19	8.00e-20	6.77e-20	6.23e-20	3.47e-20	3.11e-20	3.78e-20
Lu-173	9.27e-15	8.30e-15	7.43e-15	7.05e-15	6.16e-15	5.76e-15	6.07e-15
Lu-174	6.02e-15	5.59e-15	5.11e-15	4.87e-15	4.37e-15	4.11e-15	4.29e-15
Lu-174m	2.65e-15	2.32e-15	2.01e-15	1.90e-15	1.58e-15	1.44e-15	1.55e-15
Lu-176	2.86e-14	2.63e-14	2.43e-14	2.32e-14	2.11e-14	2.02e-14	2.09e-14
Lu-176m	2.16e-15	2.04e-15	1.90e-15	1.83e-15	1.67e-15	1.60e-15	1.65e-15
Lu-177	2.32e-15	2.12e-15	1.96e-15	1.86e-15	1.68e-15	1.62e-15	1.68e-15
Lu-177m	5.80e-14	5.34e-14	4.94e-14	4.70e-14	4.26e-14	4.08e-14	4.23e-14
Lu-178	1.03e-14	9.94e-15	9.44e-15	9.04e-15	8.45e-15	8.12e-15	8.35e-15
Lu-178m	6.23e-14	5.77e-14	5.38e-14	5.11e-14	4.66e-14	4.45e-14	4.61e-14
Lu-179	3.44e-15	3.25e-15	3.06e-15	2.93e-15	2.72e-15	2.62e-15	2.70e-15
Lu-180	9.23e-14	8.85e-14	8.38e-14	8.00e-14	7.44e-14	7.14e-14	7.35e-14
Lu-181	3.64e-14	3.44e-14	3.24e-14	3.08e-14	2.83e-14	2.71e-14	2.80e-14
Hafnium							
Hf-167	3.82e-14	3.57e-14	3.36e-14	3.19e-14	2.93e-14	2.80e-14	2.90e-14
Hf-169	3.75e-14	3.51e-14	3.31e-14	3.14e-14	2.87e-14	2.74e-14	2.84e-14
Hf-170	2.48e-14	2.30e-14	2.15e-14	2.04e-14	1.85e-14	1.76e-14	1.83e-14
Hf-172	4.64e-15	4.03e-15	3.51e-15	3.34e-15	2.77e-15	2.53e-15	2.72e-15
Hf-173	2.25e-14	2.05e-14	1.89e-14	1.80e-14	1.61e-14	1.54e-14	1.60e-14
Hf-175	2.00e-14	1.85e-14	1.71e-14	1.62e-14	1.47e-14	1.40e-14	1.46e-14
Hf-177m	1.34e-13	1.24e-13	1.15e-13	1.09e-13	9.94e-14	9.52e-14	9.87e-14
Hf-178m	1.31e-13	1.22e-13	1.15e-13	1.09e-13	9.98e-14	9.55e-14	9.89e-14
Hf-179m	5.33e-14	4.93e-14	4.60e-14	4.38e-14	3.97e-14	3.80e-14	3.94e-14
Hf-180m	5.77e-14	5.35e-14	5.00e-14	4.75e-14	4.33e-14	4.15e-14	4.30e-14
Hf-181	3.14e-14	2.92e-14	2.75e-14	2.62e-14	2.39e-14	2.28e-14	2.36e-14
Hf-182	1.41e-14	1.30e-14	1.20e-14	1.15e-14	1.05e-14	1.00e-14	1.04e-14
Hf-182m	5.34e-14	5.00e-14	4.69e-14	4.46e-14	4.08e-14	3.90e-14	4.04e-14
Hf-183	4.68e-14	4.45e-14	4.20e-14	4.00e-14	3.68e-14	3.51e-14	3.63e-14

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Hf-184	1.43e-14	1.31e-14	1.22e-14	1.16e-14	1.05e-14	1.01e-14	1.05e-14
Tantalum							
Ta-170	7.08e-14	6.69e-14	6.34e-14	6.03e-14	5.56e-14	5.32e-14	5.50e-14
Ta-172	1.02e-13	9.77e-14	9.24e-14	8.81e-14	8.16e-14	7.82e-14	8.07e-14
Ta-173	3.37e-14	3.19e-14	2.99e-14	2.86e-14	2.62e-14	2.50e-14	2.59e-14
Ta-174	5.91e-14	5.60e-14	5.29e-14	5.05e-14	4.66e-14	4.47e-14	4.61e-14
Ta-175	6.53e-14	6.22e-14	5.87e-14	5.61e-14	5.20e-14	4.98e-14	5.14e-14
Ta-176	1.34e-13	1.29e-13	1.22e-13	1.17e-13	1.10e-13	1.06e-13	1.09e-13
Ta-177	3.17e-15	2.80e-15	2.46e-15	2.34e-15	1.97e-15	1.81e-15	1.93e-15
Ta-178	6.39e-15	5.91e-15	5.41e-15	5.16e-15	4.60e-15	4.33e-15	4.53e-15
Ta-178m	6.68e-14	6.17e-14	5.74e-14	5.45e-14	4.95e-14	4.73e-14	4.91e-14
Ta-179	1.05e-15	9.08e-16	7.70e-16	7.35e-16	5.90e-16	5.24e-16	5.72e-16
Ta-180	2.19e-15	1.91e-15	1.64e-15	1.56e-15	1.28e-15	1.15e-15	1.25e-15
Ta-182	7.66e-14	7.36e-14	6.95e-14	6.64e-14	6.15e-14	5.89e-14	6.07e-14
Ta-182m	1.46e-14	1.33e-14	1.21e-14	1.16e-14	1.03e-14	9.82e-15	1.02e-14
Ta-183	1.69e-14	1.54e-14	1.42e-14	1.35e-14	1.21e-14	1.15e-14	1.20e-14
Ta-184	9.42e-14	8.91e-14	8.38e-14	7.97e-14	7.34e-14	7.03e-14	7.26e-14
Ta-185	1.10e-14	1.02e-14	9.44e-15	9.04e-15	8.16e-15	7.81e-15	8.10e-15
Ta-186	8.83e-14	8.33e-14	7.85e-14	7.47e-14	6.87e-14	6.59e-14	6.81e-14
Tungsten							
W-177	5.29e-14	4.97e-14	4.66e-14	4.43e-14	4.04e-14	3.86e-14	4.00e-14
W-178	6.42e-16	5.60e-16	4.76e-16	4.57e-16	3.65e-16	3.23e-16	3.53e-16
W-179	2.18e-15	1.89e-15	1.60e-15	1.53e-15	1.22e-15	1.08e-15	1.18e-15
W-179m	2.80e-15	2.52e-15	2.23e-15	2.14e-15	1.84e-15	1.70e-15	1.80e-15
W-181	1.71e-15	1.49e-15	1.27e-15	1.22e-15	9.73e-16	8.62e-16	9.42e-16
W-185	2.66e-16	2.58e-16	2.47e-16	2.37e-16	2.24e-16	2.16e-16	2.21e-16
W-185m	1.31e-15	1.18e-15	1.07e-15	1.03e-15	8.90e-16	8.41e-16	8.84e-16
W-187	2.70e-14	2.55e-14	2.41e-14	2.29e-14	2.10e-14	2.00e-14	2.07e-14
W-188	2.89e-16	2.75e-16	2.59e-16	2.48e-16	2.30e-16	2.22e-16	2.28e-16
W-190	8.77e-15	7.96e-15	7.23e-15	6.96e-15	6.03e-15	5.69e-15	5.98e-15
Rhenium							
Re-178	1.05e-13	1.00e-13	9.55e-14	9.15e-14	8.54e-14	8.21e-14	8.44e-14
Re-179	6.37e-14	6.02e-14	5.68e-14	5.42e-14	5.00e-14	4.79e-14	4.95e-14
Re-180	7.09e-14	6.78e-14	6.39e-14	6.09e-14	5.61e-14	5.36e-14	5.54e-14

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Re-181	4.65e-14	4.38e-14	4.10e-14	3.91e-14	3.57e-14	3.41e-14	3.53e-14
Re-182	1.05e-13	9.99e-14	9.38e-14	8.96e-14	8.25e-14	7.90e-14	8.16e-14
Re-182m	7.16e-14	6.86e-14	6.47e-14	6.19e-14	5.72e-14	5.47e-14	5.65e-14
Re-183	7.87e-15	7.05e-15	6.31e-15	6.04e-15	5.18e-15	4.84e-15	5.12e-15
Re-184	5.21e-14	4.97e-14	4.67e-14	4.45e-14	4.09e-14	3.91e-14	4.04e-14
Re-184m	2.18e-14	2.05e-14	1.90e-14	1.81e-14	1.65e-14	1.57e-14	1.63e-14
Re-186	2.12e-15	1.98e-15	1.85e-15	1.78e-15	1.61e-15	1.54e-15	1.60e-15
Re-186m	6.46e-16	5.57e-16	4.76e-16	4.54e-16	3.66e-16	3.28e-16	3.57e-16
Re-188	6.59e-15	6.27e-15	5.94e-15	5.69e-15	5.26e-15	5.07e-15	5.22e-15
Re-188m	3.28e-15	2.90e-15	2.54e-15	2.44e-15	2.00e-15	1.82e-15	1.96e-15
Re-189	4.15e-15	3.87e-15	3.60e-15	3.44e-15	3.15e-15	3.03e-15	3.13e-15
Re-190	8.15e-14	7.70e-14	7.27e-14	6.91e-14	6.36e-14	6.09e-14	6.29e-14
Re-190m	5.57e-14	5.24e-14	4.94e-14	4.70e-14	4.31e-14	4.13e-14	4.27e-14
Osmium							
Os-180	6.40e-15	5.88e-15	5.36e-15	5.13e-15	4.49e-15	4.19e-15	4.41e-15
Os-181	8.15e-14	7.76e-14	7.32e-14	6.99e-14	6.46e-14	6.18e-14	6.38e-14
Os-182	2.46e-14	2.28e-14	2.13e-14	2.03e-14	1.84e-14	1.75e-14	1.82e-14
Os-183	3.58e-14	3.33e-14	3.10e-14	2.95e-14	2.67e-14	2.54e-14	2.64e-14
Os-183m	5.93e-14	5.70e-14	5.38e-14	5.13e-14	4.75e-14	4.55e-14	4.69e-14
Os-185	4.02e-14	3.81e-14	3.59e-14	3.42e-14	3.13e-14	2.99e-14	3.09e-14
Os-189m	8.67e-19	4.58e-19	3.90e-19	3.63e-19	1.03e-19	8.95e-20	1.44e-19
Os-190m	9.37e-14	8.79e-14	8.30e-14	7.89e-14	7.23e-14	6.92e-14	7.16e-14
Os-191	4.23e-15	3.78e-15	3.40e-15	3.27e-15	2.77e-15	2.58e-15	2.73e-15
Os-191m	2.62e-16	2.31e-16	1.99e-16	1.93e-16	1.53e-16	1.35e-16	1.48e-16
Os-193	4.90e-15	4.58e-15	4.30e-15	4.11e-15	3.73e-15	3.57e-15	3.70e-15
Os-194	9.56e-17	7.84e-17	6.57e-17	6.02e-17	4.86e-17	4.41e-17	4.82e-17
Os-196	5.77e-15	5.40e-15	5.05e-15	4.82e-15	4.40e-15	4.21e-15	4.36e-15
Iridium							
Ir-180	1.00e-13	9.46e-14	8.94e-14	8.51e-14	7.82e-14	7.49e-14	7.74e-14
Ir-182	8.81e-14	8.33e-14	7.86e-14	7.49e-14	6.89e-14	6.60e-14	6.82e-14
Ir-183	7.03e-14	6.70e-14	6.34e-14	6.06e-14	5.62e-14	5.38e-14	5.55e-14
Ir-184	1.17e-13	1.11e-13	1.05e-13	1.01e-13	9.30e-14	8.92e-14	9.20e-14
Ir-185	5.02e-14	4.78e-14	4.53e-14	4.34e-14	4.03e-14	3.86e-14	3.98e-14
Ir-186	9.87e-14	9.37e-14	8.86e-14	8.46e-14	7.82e-14	7.50e-14	7.74e-14

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Ir-186m	7.45e-14	7.12e-14	6.75e-14	6.45e-14	5.98e-14	5.73e-14	5.91e-14
Ir-187	1.86e-14	1.75e-14	1.63e-14	1.56e-14	1.41e-14	1.34e-14	1.39e-14
Ir-188	1.26e-13	1.21e-13	1.15e-13	1.11e-13	1.04e-13	9.99e-14	1.03e-13
Ir-189	3.75e-15	3.37e-15	2.97e-15	2.86e-15	2.40e-15	2.19e-15	2.34e-15
Ir-190	8.65e-14	8.12e-14	7.65e-14	7.28e-14	6.66e-14	6.37e-14	6.59e-14
Ir-190m	9.24e-19	5.12e-19	4.27e-19	3.95e-19	1.15e-19	1.00e-19	1.59e-19
Ir-190n	2.60e-15	2.31e-15	2.01e-15	1.95e-15	1.58e-15	1.42e-15	1.54e-15
Ir-191m	3.78e-15	3.38e-15	3.04e-15	2.92e-15	2.47e-15	2.30e-15	2.44e-15
Ir-192	4.87e-14	4.54e-14	4.26e-14	4.05e-14	3.71e-14	3.56e-14	3.68e-14
Ir-192m	6.48e-18	4.84e-18	4.27e-18	4.02e-18	2.79e-18	2.61e-18	2.91e-18
Ir-192n	8.09e-17	7.50e-17	7.13e-17	7.03e-17	6.43e-17	6.26e-17	6.42e-17
Ir-193m	1.55e-17	1.35e-17	1.17e-17	1.13e-17	8.85e-18	7.86e-18	8.60e-18
Ir-194	8.66e-15	8.26e-15	7.81e-15	7.47e-15	6.95e-15	6.68e-15	6.88e-15
Ir-194m	1.38e-13	1.30e-13	1.23e-13	1.17e-13	1.07e-13	1.02e-13	1.06e-13
Ir-195	3.84e-15	3.51e-15	3.18e-15	3.06e-15	2.64e-15	2.46e-15	2.60e-15
Ir-195m	2.23e-14	2.08e-14	1.95e-14	1.85e-14	1.69e-14	1.61e-14	1.67e-14
Ir-196	1.90e-14	1.81e-14	1.72e-14	1.64e-14	1.52e-14	1.46e-14	1.50e-14
Ir-196m	1.46e-13	1.38e-13	1.30e-13	1.24e-13	1.14e-13	1.09e-13	1.13e-13
Platinum							
Pt-184	4.08e-14	3.79e-14	3.52e-14	3.36e-14	3.01e-14	2.86e-14	2.98e-14
Pt-186	3.95e-14	3.72e-14	3.50e-14	3.33e-14	3.04e-14	2.90e-14	3.00e-14
Pt-187	3.55e-14	3.33e-14	3.11e-14	2.96e-14	2.69e-14	2.56e-14	2.66e-14
Pt-188	1.11e-14	1.01e-14	9.23e-15	8.85e-15	7.78e-15	7.34e-15	7.69e-15
Pt-189	2.74e-14	2.57e-14	2.40e-14	2.29e-14	2.07e-14	1.96e-14	2.04e-14
Pt-191	1.60e-14	1.48e-14	1.36e-14	1.30e-14	1.15e-14	1.09e-14	1.14e-14
Pt-193	2.17e-18	1.24e-18	1.02e-18	9.40e-19	2.83e-19	2.46e-19	3.86e-19
Pt-193m	5.09e-16	4.57e-16	3.99e-16	3.90e-16	3.15e-16	2.83e-16	3.06e-16
Pt-195m	3.49e-15	3.11e-15	2.74e-15	2.64e-15	2.16e-15	1.97e-15	2.12e-15
Pt-197	1.74e-15	1.60e-15	1.46e-15	1.41e-15	1.24e-15	1.16e-15	1.22e-15
Pt-197m	4.43e-15	4.07e-15	3.71e-15	3.57e-15	3.13e-15	2.94e-15	3.08e-15
Pt-199	1.36e-14	1.29e-14	1.22e-14	1.16e-14	1.07e-14	1.02e-14	1.05e-14
Pt-200	3.52e-15	3.22e-15	2.93e-15	2.81e-15	2.46e-15	2.31e-15	2.43e-15
Pt-202	2.47e-15	2.40e-15	2.29e-15	2.21e-15	2.08e-15	2.02e-15	2.07e-15
Gold							

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Au-186	9.39e-14	8.89e-14	8.40e-14	8.01e-14	7.39e-14	7.08e-14	7.31e-14
Au-187	6.33e-14	6.05e-14	5.73e-14	5.49e-14	5.10e-14	4.88e-14	5.03e-14
Au-190	1.45e-13	1.38e-13	1.32e-13	1.27e-13	1.19e-13	1.15e-13	1.18e-13
Au-191	3.41e-14	3.19e-14	2.98e-14	2.84e-14	2.58e-14	2.45e-14	2.54e-14
Au-192	1.17e-13	1.12e-13	1.06e-13	1.02e-13	9.54e-14	9.18e-14	9.43e-14
Au-193	8.84e-15	8.06e-15	7.30e-15	7.01e-15	6.09e-15	5.70e-15	6.00e-15
Au-193m	1.14e-14	1.05e-14	9.67e-15	9.21e-15	8.37e-15	8.01e-15	8.31e-15
Au-194	6.15e-14	5.86e-14	5.54e-14	5.30e-14	4.92e-14	4.72e-14	4.86e-14
Au-195	3.84e-15	3.42e-15	2.99e-15	2.89e-15	2.34e-15	2.11e-15	2.28e-15
Au-195m	1.16e-14	1.07e-14	9.84e-15	9.37e-15	8.52e-15	8.15e-15	8.46e-15
Au-196	2.73e-14	2.53e-14	2.36e-14	2.24e-14	2.03e-14	1.94e-14	2.01e-14
Au-196m	1.34e-14	1.22e-14	1.12e-14	1.07e-14	9.42e-15	8.96e-15	9.37e-15
Au-198	2.47e-14	2.32e-14	2.19e-14	2.08e-14	1.91e-14	1.83e-14	1.89e-14
Au-198m	3.06e-14	2.79e-14	2.56e-14	2.44e-14	2.19e-14	2.09e-14	2.18e-14
Au-199	5.60e-15	5.11e-15	4.72e-15	4.53e-15	4.02e-15	3.86e-15	4.02e-15
Au-200	1.92e-14	1.84e-14	1.75e-14	1.67e-14	1.56e-14	1.50e-14	1.54e-14
Au-200m	1.18e-13	1.11e-13	1.04e-13	9.92e-14	9.10e-14	8.71e-14	9.01e-14
Au-201	3.39e-15	3.23e-15	3.07e-15	2.93e-15	2.72e-15	2.61e-15	2.69e-15
Au-202	1.50e-14	1.44e-14	1.37e-14	1.31e-14	1.22e-14	1.17e-14	1.20e-14
Mercury							
Hg-190	1.08e-14	9.78e-15	8.92e-15	8.59e-15	7.42e-15	7.02e-15	7.37e-15
Hg-191m	8.78e-14	8.31e-14	7.83e-14	7.47e-14	6.89e-14	6.59e-14	6.81e-14
Hg-192	1.51e-14	1.39e-14	1.27e-14	1.21e-14	1.07e-14	1.02e-14	1.07e-14
Hg-193	4.90e-14	4.67e-14	4.41e-14	4.21e-14	3.89e-14	3.72e-14	3.84e-14
Hg-193m	6.03e-14	5.74e-14	5.42e-14	5.18e-14	4.78e-14	4.57e-14	4.72e-14
Hg-194	3.01e-18	1.87e-18	1.49e-18	1.36e-18	4.43e-19	3.88e-19	5.87e-19
Hg-195	1.09e-14	1.02e-14	9.48e-15	9.08e-15	8.11e-15	7.64e-15	7.97e-15
Hg-195m	1.13e-14	1.05e-14	9.69e-15	9.25e-15	8.33e-15	7.92e-15	8.24e-15
Hg-197	3.35e-15	3.00e-15	2.61e-15	2.55e-15	2.05e-15	1.83e-15	1.98e-15
Hg-197m	5.23e-15	4.73e-15	4.33e-15	4.15e-15	3.62e-15	3.44e-15	3.60e-15
Hg-199m	1.03e-14	9.43e-15	8.70e-15	8.36e-15	7.38e-15	7.03e-15	7.33e-15
Hg-203	1.41e-14	1.30e-14	1.21e-14	1.15e-14	1.05e-14	1.01e-14	1.05e-14
Hg-205	2.23e-15	2.15e-15	2.05e-15	1.97e-15	1.85e-15	1.78e-15	1.83e-15
Hg-206	8.41e-15	7.86e-15	7.34e-15	7.00e-15	6.43e-15	6.16e-15	6.37e-15

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Hg-207	1.63e-13	1.56e-13	1.49e-13	1.43e-13	1.33e-13	1.28e-13	1.32e-13
Thallium							
Tl-190	8.51e-14	8.04e-14	7.62e-14	7.26e-14	6.69e-14	6.40e-14	6.61e-14
Tl-190m	1.49e-13	1.41e-13	1.33e-13	1.27e-13	1.17e-13	1.12e-13	1.16e-13
Tl-194	5.64e-14	5.32e-14	5.03e-14	4.78e-14	4.39e-14	4.19e-14	4.34e-14
Tl-194m	1.49e-13	1.41e-13	1.34e-13	1.27e-13	1.17e-13	1.12e-13	1.16e-13
Tl-195	7.26e-14	6.96e-14	6.61e-14	6.33e-14	5.89e-14	5.65e-14	5.82e-14
Tl-196	1.12e-13	1.07e-13	1.02e-13	9.76e-14	9.08e-14	8.72e-14	8.98e-14
Tl-197	2.64e-14	2.49e-14	2.34e-14	2.23e-14	2.04e-14	1.94e-14	2.01e-14
Tl-198	1.20e-13	1.15e-13	1.09e-13	1.05e-13	9.76e-14	9.37e-14	9.64e-14
Tl-198m	7.12e-14	6.69e-14	6.31e-14	6.00e-14	5.49e-14	5.24e-14	5.43e-14
Tl-199	1.40e-14	1.29e-14	1.19e-14	1.14e-14	1.02e-14	9.62e-15	1.00e-14
Tl-200	7.73e-14	7.36e-14	6.95e-14	6.64e-14	6.13e-14	5.87e-14	6.06e-14
Tl-201	4.55e-15	4.09e-15	3.63e-15	3.52e-15	2.92e-15	2.67e-15	2.86e-15
Tl-202	2.67e-14	2.49e-14	2.34e-14	2.23e-14	2.02e-14	1.92e-14	1.99e-14
Tl-204	7.19e-16	6.94e-16	6.60e-16	6.36e-16	5.94e-16	5.72e-16	5.87e-16
Tl-206	1.93e-15	1.88e-15	1.79e-15	1.73e-15	1.63e-15	1.58e-15	1.62e-15
Tl-206m	1.43e-13	1.36e-13	1.28e-13	1.22e-13	1.12e-13	1.07e-13	1.11e-13
Tl-207	1.87e-15	1.81e-15	1.73e-15	1.66e-15	1.57e-15	1.52e-15	1.56e-15
Tl-208	2.07e-13	2.00e-13	1.92e-13	1.84e-13	1.74e-13	1.68e-13	1.72e-13
Tl-209	1.31e-13	1.25e-13	1.19e-13	1.14e-13	1.06e-13	1.02e-13	1.05e-13
Tl-210	1.71e-13	1.65e-13	1.56e-13	1.49e-13	1.40e-13	1.34e-13	1.38e-13
Lead							
Pb-194	6.37e-14	6.06e-14	5.72e-14	5.47e-14	5.05e-14	4.83e-14	4.99e-14
Pb-195m	9.77e-14	9.24e-14	8.71e-14	8.30e-14	7.62e-14	7.28e-14	7.53e-14
Pb-196	2.83e-14	2.63e-14	2.45e-14	2.34e-14	2.11e-14	2.01e-14	2.09e-14
Pb-197	9.11e-14	8.71e-14	8.26e-14	7.90e-14	7.33e-14	7.03e-14	7.24e-14
Pb-197m	6.88e-14	6.49e-14	6.11e-14	5.82e-14	5.34e-14	5.10e-14	5.28e-14
Pb-198	2.50e-14	2.32e-14	2.16e-14	2.06e-14	1.86e-14	1.77e-14	1.84e-14
Pb-199	6.15e-14	5.86e-14	5.54e-14	5.30e-14	4.91e-14	4.70e-14	4.85e-14
Pb-200	1.13e-14	1.03e-14	9.36e-15	9.00e-15	7.84e-15	7.40e-15	7.77e-15
Pb-201	4.41e-14	4.15e-14	3.89e-14	3.71e-14	3.39e-14	3.24e-14	3.35e-14
Pb-201m	2.15e-14	2.03e-14	1.92e-14	1.83e-14	1.68e-14	1.60e-14	1.66e-14
Pb-202	3.91e-18	2.12e-18	1.78e-18	1.65e-18	4.83e-19	4.19e-19	6.66e-19

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Pb-202m	1.18e-13	1.13e-13	1.06e-13	1.01e-13	9.35e-14	8.95e-14	9.24e-14
Pb-203	1.78e-14	1.64e-14	1.51e-14	1.44e-14	1.29e-14	1.23e-14	1.28e-14
Pb-204m	1.23e-13	1.17e-13	1.11e-13	1.05e-13	9.75e-14	9.33e-14	9.63e-14
Pb-205	3.96e-18	2.14e-18	1.81e-18	1.67e-18	4.90e-19	4.25e-19	6.75e-19
Pb-209	5.04e-16	4.90e-16	4.68e-16	4.51e-16	4.25e-16	4.12e-16	4.22e-16
Pb-210	8.57e-17	6.97e-17	5.80e-17	5.31e-17	4.17e-17	3.75e-17	4.14e-17
Pb-211	5.35e-15	5.11e-15	4.84e-15	4.62e-15	4.29e-15	4.12e-15	4.24e-15
Pb-212	8.52e-15	7.82e-15	7.17e-15	6.84e-15	6.16e-15	5.87e-15	6.11e-15
Pb-214	1.54e-14	1.43e-14	1.33e-14	1.27e-14	1.16e-14	1.11e-14	1.15e-14
Bismuth							
Bi-197	1.02e-13	9.73e-14	9.21e-14	8.79e-14	8.14e-14	7.80e-14	8.04e-14
Bi-200	1.44e-13	1.37e-13	1.29e-13	1.23e-13	1.13e-13	1.08e-13	1.12e-13
Bi-201	1.03e-13	9.89e-14	9.38e-14	8.97e-14	8.34e-14	8.00e-14	8.24e-14
Bi-202	1.64e-13	1.56e-13	1.48e-13	1.41e-13	1.30e-13	1.25e-13	1.29e-13
Bi-203	1.42e-13	1.37e-13	1.30e-13	1.24e-13	1.16e-13	1.11e-13	1.14e-13
Bi-204	1.73e-13	1.66e-13	1.57e-13	1.50e-13	1.38e-13	1.33e-13	1.37e-13
Bi-205	1.01e-13	9.68e-14	9.20e-14	8.81e-14	8.21e-14	7.88e-14	8.11e-14
Bi-206	1.94e-13	1.86e-13	1.76e-13	1.68e-13	1.55e-13	1.49e-13	1.54e-13
Bi-207	9.08e-14	8.68e-14	8.21e-14	7.83e-14	7.23e-14	6.92e-14	7.14e-14
Bi-208	1.63e-13	1.57e-13	1.51e-13	1.46e-13	1.39e-13	1.34e-13	1.37e-13
Bi-210	1.26e-15	1.22e-15	1.17e-15	1.13e-15	1.06e-15	1.03e-15	1.05e-15
Bi-210m	1.54e-14	1.43e-14	1.32e-14	1.26e-14	1.15e-14	1.10e-14	1.14e-14
Bi-211	2.78e-15	2.58e-15	2.42e-15	2.30e-15	2.10e-15	2.01e-15	2.08e-15
Bi-212	8.10e-15	7.78e-15	7.40e-15	7.07e-15	6.59e-15	6.33e-15	6.51e-15
Bi-212n	1.91e-15	1.85e-15	1.77e-15	1.71e-15	1.61e-15	1.56e-15	1.60e-15
Bi-213	8.96e-15	8.44e-15	7.99e-15	7.61e-15	7.00e-15	6.71e-15	6.93e-15
Bi-214	9.14e-14	8.79e-14	8.38e-14	8.02e-14	7.50e-14	7.21e-14	7.41e-14
Bi-215	1.73e-14	1.63e-14	1.53e-14	1.46e-14	1.35e-14	1.29e-14	1.33e-14
Bi-216	4.97e-14	4.69e-14	4.45e-14	4.23e-14	3.90e-14	3.74e-14	3.86e-14
Polonium							
Po-203	9.71e-14	9.30e-14	8.79e-14	8.39e-14	7.77e-14	7.45e-14	7.68e-14
Po-204	6.76e-14	6.41e-14	6.02e-14	5.74e-14	5.25e-14	5.01e-14	5.19e-14
Po-205	9.38e-14	8.99e-14	8.50e-14	8.12e-14	7.51e-14	7.19e-14	7.42e-14
Po-206	6.98e-14	6.63e-14	6.24e-14	5.94e-14	5.46e-14	5.22e-14	5.40e-14

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Po-207	7.57e-14	7.25e-14	6.84e-14	6.52e-14	6.02e-14	5.76e-14	5.95e-14
Po-208	1.24e-18	1.17e-18	1.10e-18	1.04e-18	9.55e-19	9.11e-19	9.44e-19
Po-209	3.62e-16	3.44e-16	3.22e-16	3.06e-16	2.81e-16	2.69e-16	2.78e-16
Po-210	5.77e-19	5.53e-19	5.23e-19	4.98e-19	4.60e-19	4.40e-19	4.54e-19
Po-211	4.85e-16	4.63e-16	4.38e-16	4.17e-16	3.85e-16	3.68e-16	3.80e-16
Po-212m	4.85e-15	4.68e-15	4.51e-15	4.34e-15	4.11e-15	3.96e-15	4.05e-15
Po-213	2.22e-18	2.13e-18	2.01e-18	1.92e-18	1.77e-18	1.69e-18	1.75e-18
Po-214	4.93e-18	4.72e-18	4.46e-18	4.25e-18	3.92e-18	3.75e-18	3.87e-18
Po-215	1.04e-17	9.74e-18	9.22e-18	8.75e-18	8.02e-18	7.67e-18	7.94e-18
Po-216	9.09e-19	8.71e-19	8.23e-19	7.83e-19	7.24e-19	6.93e-19	7.15e-19
Po-218	2.06e-20	2.00e-20	1.90e-20	1.83e-20	1.71e-20	1.65e-20	1.69e-20
Astatine							
At-204	1.39e-13	1.31e-13	1.24e-13	1.18e-13	1.08e-13	1.04e-13	1.07e-13
At-205	6.84e-14	6.50e-14	6.15e-14	5.87e-14	5.41e-14	5.18e-14	5.35e-14
At-206	1.48e-13	1.40e-13	1.33e-13	1.26e-13	1.17e-13	1.12e-13	1.16e-13
At-207	1.20e-13	1.14e-13	1.08e-13	1.04e-13	9.61e-14	9.21e-14	9.49e-14
At-208	1.80e-13	1.72e-13	1.63e-13	1.56e-13	1.44e-13	1.38e-13	1.42e-13
At-209	1.35e-13	1.28e-13	1.21e-13	1.15e-13	1.06e-13	1.01e-13	1.04e-13
At-210	1.77e-13	1.70e-13	1.61e-13	1.54e-13	1.44e-13	1.38e-13	1.42e-13
At-211	1.80e-15	1.61e-15	1.44e-15	1.38e-15	1.15e-15	1.06e-15	1.13e-15
At-215	1.01e-17	9.42e-18	8.87e-18	8.43e-18	7.70e-18	7.37e-18	7.63e-18
At-216	1.33e-16	1.20e-16	1.09e-16	1.04e-16	8.99e-17	8.41e-17	8.87e-17
At-217	1.43e-17	1.32e-17	1.23e-17	1.17e-17	1.06e-17	1.01e-17	1.05e-17
At-218	4.83e-18	4.69e-18	4.48e-18	4.32e-18	4.07e-18	3.94e-18	4.03e-18
At-220	3.20e-14	3.00e-14	2.81e-14	2.68e-14	2.46e-14	2.37e-14	2.45e-14
Radon							
Rn-207	5.87e-14	5.55e-14	5.23e-14	4.98e-14	4.57e-14	4.37e-14	4.52e-14
Rn-209	7.10e-14	6.74e-14	6.38e-14	6.09e-14	5.62e-14	5.39e-14	5.56e-14
Rn-210	3.56e-15	3.37e-15	3.17e-15	3.02e-15	2.77e-15	2.65e-15	2.74e-15
Rn-211	1.11e-13	1.06e-13	1.01e-13	9.59e-14	8.88e-14	8.51e-14	8.78e-14
Rn-212	2.00e-17	1.91e-17	1.81e-17	1.72e-17	1.58e-17	1.51e-17	1.56e-17
Rn-218	4.48e-17	4.24e-17	4.02e-17	3.82e-17	3.51e-17	3.36e-17	3.47e-17
Rn-219	3.46e-15	3.21e-15	3.00e-15	2.85e-15	2.61e-15	2.50e-15	2.59e-15
Rn-220	3.71e-17	3.50e-17	3.32e-17	3.16e-17	2.90e-17	2.77e-17	2.86e-17

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Rn-222	2.30e-17	2.16e-17	2.05e-17	1.95e-17	1.79e-17	1.71e-17	1.77e-17
Rn-223	2.20e-14	2.08e-14	1.97e-14	1.87e-14	1.72e-14	1.65e-14	1.70e-14
Francium							
Fr-212	6.78e-14	6.48e-14	6.12e-14	5.84e-14	5.41e-14	5.19e-14	5.35e-14
Fr-219	2.10e-16	1.96e-16	1.84e-16	1.75e-16	1.60e-16	1.53e-16	1.58e-16
Fr-220	5.05e-16	4.52e-16	4.09e-16	3.91e-16	3.36e-16	3.16e-16	3.33e-16
Fr-221	1.72e-15	1.58e-15	1.45e-15	1.38e-15	1.25e-15	1.20e-15	1.25e-15
Fr-222	1.28e-14	1.20e-14	1.11e-14	1.06e-14	9.76e-15	9.40e-15	9.71e-15
Fr-223	3.86e-15	3.54e-15	3.24e-15	3.09e-15	2.76e-15	2.62e-15	2.73e-15
Fr-224	3.63e-14	3.46e-14	3.28e-14	3.13e-14	2.91e-14	2.80e-14	2.88e-14
Fr-227	2.89e-14	2.70e-14	2.54e-14	2.42e-14	2.21e-14	2.11e-14	2.19e-14
Radium							
Ra-219	9.97e-15	9.23e-15	8.59e-15	8.17e-15	7.45e-15	7.12e-15	7.38e-15
Ra-220	2.76e-16	2.59e-16	2.45e-16	2.33e-16	2.13e-16	2.04e-16	2.11e-16
Ra-221	2.06e-15	1.86e-15	1.72e-15	1.64e-15	1.45e-15	1.39e-15	1.45e-15
Ra-222	5.45e-16	5.05e-16	4.71e-16	4.48e-16	4.10e-16	3.93e-16	4.07e-16
Ra-223	7.94e-15	7.25e-15	6.67e-15	6.36e-15	5.67e-15	5.40e-15	5.63e-15
Ra-224	6.15e-16	5.66e-16	5.22e-16	4.97e-16	4.53e-16	4.36e-16	4.51e-16
Ra-225	5.64e-16	4.76e-16	4.11e-16	3.82e-16	3.22e-16	3.00e-16	3.21e-16
Ra-226	4.31e-16	3.94e-16	3.63e-16	3.46e-16	3.12e-16	3.00e-16	3.11e-16
Ra-227	9.54e-15	8.89e-15	8.34e-15	7.93e-15	7.27e-15	6.97e-15	7.21e-15
Ra-228	1.15e-17	8.08e-18	6.71e-18	5.92e-18	3.02e-18	2.71e-18	3.41e-18
Ra-230	4.91e-15	4.53e-15	4.22e-15	4.02e-15	3.62e-15	3.45e-15	3.59e-15
Actinium							
Ac-223	1.00e-15	9.20e-16	8.53e-16	8.11e-16	7.30e-16	6.98e-16	7.26e-16
Ac-224	1.31e-14	1.19e-14	1.09e-14	1.04e-14	9.23e-15	8.85e-15	9.22e-15
Ac-225	8.06e-16	7.25e-16	6.66e-16	6.33e-16	5.57e-16	5.32e-16	5.56e-16
Ac-226	8.42e-15	7.74e-15	7.16e-15	6.83e-15	6.20e-15	5.96e-15	6.18e-15
Ac-227	8.16e-18	6.77e-18	6.04e-18	5.64e-18	4.49e-18	4.22e-18	4.55e-18
Ac-228	5.26e-14	5.04e-14	4.77e-14	4.55e-14	4.22e-14	4.04e-14	4.17e-14
Ac-230	3.63e-14	3.49e-14	3.33e-14	3.19e-14	2.99e-14	2.87e-14	2.95e-14
Ac-231	2.65e-14	2.45e-14	2.28e-14	2.17e-14	1.98e-14	1.90e-14	1.97e-14
Ac-232	7.33e-14	7.06e-14	6.75e-14	6.47e-14	6.08e-14	5.85e-14	6.00e-14
Ac-233	3.28e-14	3.09e-14	2.94e-14	2.80e-14	2.58e-14	2.47e-14	2.55e-14

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m3)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Thorium							
Th-223	4.00e-15	3.57e-15	3.26e-15	3.09e-15	2.69e-15	2.56e-15	2.69e-15
Th-224	1.35e-15	1.23e-15	1.14e-15	1.09e-15	9.83e-16	9.47e-16	9.82e-16
Th-226	4.59e-16	4.12e-16	3.80e-16	3.59e-16	3.20e-16	3.09e-16	3.21e-16
Th-227	7.19e-15	6.59e-15	6.08e-15	5.77e-15	5.24e-15	5.01e-15	5.20e-15
Th-228	1.20e-16	1.07e-16	9.65e-17	9.20e-17	7.92e-17	7.49e-17	7.89e-17
Th-229	4.78e-15	4.27e-15	3.89e-15	3.69e-15	3.22e-15	3.07e-15	3.22e-15
Th-230	2.43e-17	2.08e-17	1.83e-17	1.75e-17	1.37e-17	1.25e-17	1.36e-17
Th-231	8.09e-16	7.07e-16	6.38e-16	6.06e-16	5.12e-16	4.79e-16	5.08e-16
Th-232	1.40e-17	1.16e-17	9.91e-18	9.40e-18	6.88e-18	6.19e-18	6.89e-18
Th-233	3.34e-15	3.16e-15	2.99e-15	2.86e-15	2.64e-15	2.53e-15	2.61e-15
Th-234	5.16e-16	4.58e-16	4.12e-16	3.91e-16	3.33e-16	3.11e-16	3.30e-16
Th-235	5.71e-15	5.47e-15	5.20e-15	4.97e-15	4.63e-15	4.45e-15	4.58e-15
Th-236	3.08e-15	2.90e-15	2.74e-15	2.61e-15	2.41e-15	2.32e-15	2.39e-15
Protactinium							
Pa-227	1.06e-15	9.33e-16	8.40e-16	7.95e-16	6.77e-16	6.36e-16	6.73e-16
Pa-228	8.06e-14	7.67e-14	7.25e-14	6.91e-14	6.39e-14	6.13e-14	6.32e-14
Pa-229	3.45e-15	3.04e-15	2.78e-15	2.61e-15	2.27e-15	2.17e-15	2.28e-15
Pa-230	3.92e-14	3.73e-14	3.52e-14	3.34e-14	3.08e-14	2.95e-14	3.05e-14
Pa-231	2.02e-15	1.84e-15	1.70e-15	1.62e-15	1.46e-15	1.40e-15	1.45e-15
Pa-232	5.55e-14	5.31e-14	5.02e-14	4.78e-14	4.41e-14	4.22e-14	4.36e-14
Pa-233	1.28e-14	1.18e-14	1.09e-14	1.04e-14	9.44e-15	9.06e-15	9.39e-15
Pa-234	8.71e-14	8.30e-14	7.85e-14	7.47e-14	6.90e-14	6.62e-14	6.83e-14
Pa-234m	4.25e-15	4.12e-15	3.93e-15	3.77e-15	3.55e-15	3.42e-15	3.51e-15
Pa-235	1.64e-15	1.59e-15	1.52e-15	1.47e-15	1.39e-15	1.34e-15	1.37e-15
Pa-236	5.74e-14	5.50e-14	5.24e-14	5.01e-14	4.68e-14	4.49e-14	4.62e-14
Pa-237	3.82e-14	3.65e-14	3.46e-14	3.29e-14	3.04e-14	2.91e-14	3.00e-14
Uranium							
U-227	6.76e-15	6.15e-15	5.67e-15	5.37e-15	4.84e-15	4.65e-15	4.83e-15
U-228	2.31e-16	2.06e-16	1.89e-16	1.78e-16	1.57e-16	1.50e-16	1.57e-16
U-230	6.82e-17	6.00e-17	5.40e-17	5.16e-17	4.31e-17	4.04e-17	4.29e-17
U-231	3.98e-15	3.49e-15	3.18e-15	2.99e-15	2.59e-15	2.47e-15	2.60e-15
U-232	2.03e-17	1.63e-17	1.43e-17	1.33e-17	9.92e-18	9.20e-18	1.01e-17

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
U-233	1.75e-17	1.48e-17	1.33e-17	1.24e-17	1.02e-17	9.70e-18	1.03e-17
U-234	1.34e-17	1.03e-17	8.85e-18	8.06e-18	5.59e-18	5.15e-18	5.81e-18
U-235	9.57e-15	8.72e-15	8.05e-15	7.68e-15	6.91e-15	6.67e-15	6.92e-15
U-236	9.60e-18	7.01e-18	5.96e-18	5.34e-18	3.38e-18	3.08e-18	3.59e-18
U-237	7.65e-15	6.86e-15	6.26e-15	5.93e-15	5.24e-15	5.01e-15	5.23e-15
U-238	7.88e-18	5.82e-18	4.98e-18	4.48e-18	2.90e-18	2.65e-18	3.06e-18
U-239	3.81e-15	3.55e-15	3.24e-15	3.13e-15	2.74e-15	2.56e-15	2.69e-15
U-240	4.52e-16	4.10e-16	3.81e-16	3.60e-16	3.23e-16	3.11e-16	3.23e-16
U-242	3.53e-15	3.33e-15	3.13e-15	2.99e-15	2.74e-15	2.61e-15	2.70e-15
Neptunium							
Np-232	7.03e-14	6.67e-14	6.28e-14	5.97e-14	5.50e-14	5.27e-14	5.44e-14
Np-233	4.95e-15	4.40e-15	4.05e-15	3.79e-15	3.35e-15	3.23e-15	3.37e-15
Np-234	6.60e-14	6.34e-14	6.03e-14	5.77e-14	5.39e-14	5.18e-14	5.33e-14
Np-235	5.69e-17	4.45e-17	3.94e-17	3.60e-17	2.69e-17	2.53e-17	2.78e-17
Np-236	8.07e-15	7.20e-15	6.65e-15	6.29e-15	5.56e-15	5.37e-15	5.59e-15
Np-236m	2.89e-15	2.59e-15	2.40e-15	2.25e-15	2.01e-15	1.93e-15	2.01e-15
Np-237	1.29e-15	1.13e-15	1.02e-15	9.61e-16	8.17e-16	7.70e-16	8.15e-16
Np-238	3.53e-14	3.40e-14	3.22e-14	3.07e-14	2.85e-14	2.73e-14	2.81e-14
Np-239	1.06e-14	9.57e-15	8.85e-15	8.36e-15	7.53e-15	7.26e-15	7.54e-15
Np-240	6.26e-14	5.96e-14	5.63e-14	5.36e-14	4.94e-14	4.73e-14	4.89e-14
Np-240m	2.13e-14	2.03e-14	1.93e-14	1.84e-14	1.70e-14	1.63e-14	1.68e-14
Np-241	3.52e-15	3.26e-15	3.06e-15	2.91e-15	2.66e-15	2.57e-15	2.65e-15
Np-242	1.97e-14	1.89e-14	1.81e-14	1.73e-14	1.62e-14	1.56e-14	1.60e-14
Np-242m	5.56e-14	5.31e-14	5.02e-14	4.78e-14	4.41e-14	4.23e-14	4.37e-14
Plutonium							
Pu-232	3.43e-15	3.02e-15	2.78e-15	2.60e-15	2.29e-15	2.22e-15	2.32e-15
Pu-234	3.71e-15	3.27e-15	3.01e-15	2.82e-15	2.48e-15	2.39e-15	2.50e-15
Pu-235	5.07e-15	4.51e-15	4.16e-15	3.90e-15	3.45e-15	3.32e-15	3.47e-15
Pu-236	1.19e-17	8.31e-18	7.10e-18	6.27e-18	3.76e-18	3.38e-18	4.03e-18
Pu-237	2.66e-15	2.34e-15	2.15e-15	2.01e-15	1.77e-15	1.70e-15	1.78e-15
Pu-238	1.00e-17	6.83e-18	5.80e-18	5.08e-18	2.87e-18	2.55e-18	3.12e-18
Pu-239	7.55e-18	5.89e-18	5.21e-18	4.76e-18	3.54e-18	3.30e-18	3.64e-18
Pu-240	9.65e-18	6.60e-18	5.62e-18	4.93e-18	2.82e-18	2.52e-18	3.06e-18
Pu-241	1.57e-19	1.44e-19	1.34e-19	1.27e-19	1.14e-19	1.10e-19	1.14e-19

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Pu-242	1.29e-17	1.01e-17	9.09e-18	8.33e-18	6.28e-18	5.87e-18	6.43e-18
Pu-243	1.65e-15	1.50e-15	1.37e-15	1.31e-15	1.14e-15	1.08e-15	1.13e-15
Pu-244	1.26e-15	1.21e-15	1.16e-15	1.11e-15	1.04e-15	9.98e-16	1.03e-15
Pu-245	2.44e-14	2.30e-14	2.17e-14	2.06e-14	1.90e-14	1.82e-14	1.88e-14
Pu-246	7.79e-15	7.01e-15	6.43e-15	6.08e-15	5.44e-15	5.24e-15	5.45e-15
Americium							
Am-237	2.14e-14	1.97e-14	1.83e-14	1.74e-14	1.58e-14	1.52e-14	1.57e-14
Am-238	5.31e-14	5.07e-14	4.79e-14	4.56e-14	4.21e-14	4.04e-14	4.17e-14
Am-239	1.34e-14	1.21e-14	1.11e-14	1.05e-14	9.39e-15	9.06e-15	9.42e-15
Am-240	6.08e-14	5.82e-14	5.50e-14	5.23e-14	4.84e-14	4.64e-14	4.79e-14
Am-241	1.01e-15	8.75e-16	7.44e-16	7.14e-16	5.65e-16	5.00e-16	5.48e-16
Am-242	1.20e-15	1.09e-15	1.02e-15	9.62e-16	8.67e-16	8.38e-16	8.69e-16
Am-242m	4.38e-17	3.18e-17	2.80e-17	2.51e-17	1.75e-17	1.60e-17	1.81e-17
Am-243	2.70e-15	2.41e-15	2.11e-15	2.05e-15	1.65e-15	1.48e-15	1.60e-15
Am-244	4.69e-14	4.48e-14	4.23e-14	4.03e-14	3.71e-14	3.56e-14	3.68e-14
Am-244m	2.63e-15	2.54e-15	2.42e-15	2.32e-15	2.18e-15	2.10e-15	2.16e-15
Am-245	2.57e-15	2.38e-15	2.22e-15	2.11e-15	1.93e-15	1.87e-15	1.93e-15
Am-246	4.42e-14	4.18e-14	3.94e-14	3.75e-14	3.45e-14	3.30e-14	3.41e-14
Am-246m	5.97e-14	5.75e-14	5.44e-14	5.19e-14	4.82e-14	4.62e-14	4.76e-14
Am-247	9.32e-15	8.57e-15	7.99e-15	7.58e-15	6.91e-15	6.67e-15	6.90e-15
Curium							
Cm-238	4.50e-15	3.98e-15	3.68e-15	3.45e-15	3.05e-15	2.95e-15	3.08e-15
Cm-239	1.48e-14	1.34e-14	1.24e-14	1.17e-14	1.05e-14	1.02e-14	1.06e-14
Cm-240	1.27e-17	8.55e-18	7.37e-18	6.45e-18	3.83e-18	3.41e-18	4.10e-18
Cm-241	2.88e-14	2.67e-14	2.52e-14	2.39e-14	2.17e-14	2.08e-14	2.16e-14
Cm-242	1.11e-17	7.44e-18	6.40e-18	5.59e-18	3.26e-18	2.89e-18	3.50e-18
Cm-243	7.51e-15	6.80e-15	6.28e-15	5.94e-15	5.35e-15	5.16e-15	5.36e-15
Cm-244	1.04e-17	7.19e-18	6.27e-18	5.54e-18	3.50e-18	3.16e-18	3.70e-18
Cm-245	5.85e-15	5.20e-15	4.80e-15	4.51e-15	4.00e-15	3.87e-15	4.03e-15
Cm-246	2.35e-16	2.23e-16	2.12e-16	2.03e-16	1.89e-16	1.82e-16	1.87e-16
Cm-247	1.85e-14	1.73e-14	1.63e-14	1.55e-14	1.42e-14	1.36e-14	1.41e-14
Cm-248	8.30e-14	7.98e-14	7.61e-14	7.29e-14	6.84e-14	6.58e-14	6.76e-14
Cm-249	1.92e-15	1.83e-15	1.74e-15	1.66e-15	1.55e-15	1.49e-15	1.53e-15
Cm-250	8.47e-13	8.14e-13	7.77e-13	7.44e-13	6.98e-13	6.72e-13	6.90e-13

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m ³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Cm-251	7.94e-15	7.51e-15	7.12e-15	6.78e-15	6.25e-15	6.00e-15	6.19e-15
Berkelium							
Bk-245	1.32e-14	1.19e-14	1.10e-14	1.04e-14	9.34e-15	9.03e-15	9.37e-15
Bk-246	4.99e-14	4.76e-14	4.49e-14	4.27e-14	3.94e-14	3.78e-14	3.90e-14
Bk-247	8.36e-15	7.59e-15	6.97e-15	6.62e-15	5.92e-15	5.65e-15	5.89e-15
Bk-248m	3.54e-15	3.26e-15	3.07e-15	2.91e-15	2.64e-15	2.55e-15	2.64e-15
Bk-249	2.32e-17	2.24e-17	2.12e-17	2.02e-17	1.88e-17	1.80e-17	1.86e-17
Bk-250	5.41e-14	5.22e-14	4.93e-14	4.70e-14	4.36e-14	4.18e-14	4.31e-14
Bk-251	5.75e-15	5.20e-15	4.84e-15	4.59e-15	4.12e-15	3.99e-15	4.14e-15
Californium							
Cf-244	1.24e-17	8.05e-18	6.94e-18	6.04e-18	3.49e-18	3.05e-18	3.73e-18
Cf-246	1.12e-17	7.95e-18	7.04e-18	6.31e-18	4.36e-18	3.99e-18	4.53e-18
Cf-247	5.23e-15	4.64e-15	4.31e-15	4.05e-15	3.59e-15	3.47e-15	3.61e-15
Cf-248	3.15e-17	2.69e-17	2.50e-17	2.34e-17	2.01e-17	1.91e-17	2.01e-17
Cf-249	1.92e-14	1.79e-14	1.68e-14	1.59e-14	1.46e-14	1.40e-14	1.45e-14
Cf-250	6.24e-16	5.97e-16	5.69e-16	5.45e-16	5.09e-16	4.90e-16	5.04e-16
Cf-251	6.88e-15	6.20e-15	5.73e-15	5.43e-15	4.86e-15	4.70e-15	4.88e-15
Cf-252	2.87e-14	2.76e-14	2.63e-14	2.52e-14	2.37e-14	2.28e-14	2.34e-14
Cf-253	1.48e-16	1.32e-16	1.22e-16	1.16e-16	1.03e-16	9.78e-17	1.02e-16
Cf-254	1.07e-12	1.03e-12	9.79e-13	9.38e-13	8.79e-13	8.46e-13	8.69e-13
Cf-255	5.79e-16	5.63e-16	5.38e-16	5.18e-16	4.89e-16	4.73e-16	4.84e-16
Einsteinium							
Es-249	2.39e-14	2.22e-14	2.09e-14	1.98e-14	1.81e-14	1.73e-14	1.79e-14
Es-250	6.98e-14	6.57e-14	6.18e-14	5.87e-14	5.38e-14	5.16e-14	5.34e-14
Es-250m	3.25e-14	3.09e-14	2.92e-14	2.78e-14	2.56e-14	2.46e-14	2.54e-14
Es-251	5.22e-15	4.64e-15	4.30e-15	4.06e-15	3.59e-15	3.48e-15	3.62e-15
Es-253	2.22e-17	1.96e-17	1.82e-17	1.71e-17	1.50e-17	1.43e-17	1.50e-17
Es-254	2.59e-16	2.08e-16	1.84e-16	1.71e-16	1.33e-16	1.22e-16	1.33e-16
Es-254m	2.83e-14	2.69e-14	2.55e-14	2.43e-14	2.23e-14	2.14e-14	2.21e-14
Es-255	1.57e-16	1.52e-16	1.45e-16	1.39e-16	1.30e-16	1.26e-16	1.29e-16
Es-256	2.10e-15	2.03e-15	1.94e-15	1.87e-15	1.76e-15	1.70e-15	1.74e-15
Fermium							
Fm-251	8.83e-15	8.08e-15	7.56e-15	7.16e-15	6.45e-15	6.23e-15	6.46e-15
Fm-252	2.79e-17	2.32e-17	2.14e-17	2.00e-17	1.68e-17	1.59e-17	1.69e-17

Table A-4. Effective dose rate coefficients for air submersion (continued)

Nuclide	Dose Rate Coefficient (Sv/s per Bq/m³)						Per Capita
	Newborn	1-year	5-year	10-year	15-year	Adult	
Fm-253	3.38e-15	3.00e-15	2.78e-15	2.63e-15	2.33e-15	2.25e-15	2.34e-15
Fm-254	4.50e-16	4.29e-16	4.08e-16	3.91e-16	3.64e-16	3.50e-16	3.60e-16
Fm-255	1.82e-16	1.39e-16	1.22e-16	1.12e-16	8.26e-17	7.47e-17	8.33e-17
Fm-256	7.81e-13	7.51e-13	7.16e-13	6.86e-13	6.43e-13	6.19e-13	6.36e-13
Fm-257	8.39e-15	7.65e-15	7.13e-15	6.77e-15	6.12e-15	5.91e-15	6.12e-15

APPENDIX B: REFERENCES

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APPENDIX C: GLOSSARY

Absorbed Dose (D) — The mean energy imparted by ionizing radiation to the matter in a volume element per unit mass of irradiated material. The absorbed dose is expressed in units of rad or gray (Gy) (1 rad = 0.01 gray).

Absorption Type — In the International Commission on Radiological Protection's (ICRP) respiratory tract model introduced in ICRP Publication 66, 1994 and modified in Publication 130, 2015, a classification scheme for inhaled material according to its rate of absorption from the lung to blood. Three main absorption types are considered: Type F (fast rate), Type M (moderate rate), and Type S (slow rate).

Committed Effective Dose (E_{50}) — The sum of the committed equivalent doses to various tissues or organs in the body ($H_{T,50}$), each multiplied by the appropriate tissue weighting factor (w_T)--that is, $E_{50} = \sum w_T H_{T,50} + w_{\text{Remainder}} H_{\text{Remainder},50}$, where $w_{\text{Remainder}}$ is the tissue weighting factor assigned to the remainder organs and tissues and $H_{\text{Remainder},50}$ is the committed equivalent dose to the remainder organs and tissues. Committed effective dose is expressed in the SI unit sievert (Sv) or conventional unit rem (1 rem = 0.01 Sv).

Committed Equivalent Dose ($H_{T,50}$) — The equivalent dose calculated to be received by a tissue or organ over a 50-year period after the intake of a radionuclide by an adult or to age 70 years after intake by a pre-adult. It does not include contributions from radiation sources external to the body. Committed equivalent dose is expressed in the SI unit sievert (Sv) or conventional unit rem (1 rem = 0.01 Sv).

DCAL — Dose and Risk Calculation software. DCAL consists of a series of computational modules, driven in either an interactive or a batch mode, for the computation of dose and risk coefficients.

Effective Dose (E) — The summation of the products of the equivalent dose received by specified tissues and organs of the body and tissue weighting factors for the specified tissues and organs, given by the expression:

$$E = \sum_T w_T \sum_R w_R D_{T,R} \quad \text{or} \quad E = \sum_T w_T H_T$$

where H_T or $w_R D_{T,R}$ is the equivalent dose in a tissue or organ, T , and w_T is the tissue weighting factor. The effective dose is expressed in the SI unit sievert (Sv) or conventional unit rem (1 rem = 0.01 Sv).

Equivalent Dose (H_T) — The product of the mean absorbed dose ($D_{T,R}$) in a tissue or organ (T) and a radiation (R) weighting factor (w_R). For external dose, the equivalent dose to the whole body is assessed at a depth of 1 cm in tissue; the equivalent dose to the lens of the eye is assessed at a depth of 0.3 cm in tissue and the equivalent dose to the extremity and skin is assessed at a depth of 0.007 cm in tissue. Equivalent dose is expressed in SI unit sievert (Sv) or conventional unit rem (1 rem = 0.01 Sv).

f_A — The fraction of a radionuclide reaching the small intestine that would be absorbed to blood during passage through the gastrointestinal tract in the absence of radiological decay.

Member of the Public — An individual who is not a general employee. An individual is not a “member of the public” during any period in which the individual receives an occupational dose.

Per Capita Dose ($E_{per\ capita}$) — The population weighted sum of age-specific effective dose coefficients, where the weight takes account of the fraction of each subgroup in the U.S. population represented by an age-specific effective dose coefficient and the level of exposure to the radionuclide for that age group.

QCAL — Quality Assurance software code for DCAL.

Rad — The rad is an acronym that stands for radiation absorbed dose (rad). The rad unit is a conventional unit of radiation measurement of the absorbed dose. The SI unit for absorbed dose is the Gray (Gy). 1 Gy = 100 rad.

Radiation — Ionizing radiation: alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. Radiation, as used in this technical standard, does not include non-ionizing radiation, such as radio waves; microwaves; or visible, infrared, or ultraviolet light.

Radiation Weighting Factor (w_R) — The modifying factor used to calculate the equivalent dose from the average tissue or organ absorbed dose; the absorbed dose is multiplied by the appropriate radiation weighting factor.

Reference Individual — An idealized male or female with characteristics defined by ICRP for the purpose of radiological protection and with the anatomical and physiological characteristics defined in reports of the ICRP task groups (ICRP 1975, 2002).

Reference Person — A hypothetical aggregation of human (male and female) physical and physiological characteristics arrived at by international consensus for the purpose of standardizing radiation dose calculations.

Rem — The rem is an acronym that stands for Roentgen equivalent man (rem). The rem unit is a conventional unit of radiation measurement of the equivalent dose (H_T) and the effective dose, (E). See description above for equivalent and effective dose. The SI unit for equivalent or effective dose is the sievert (Sv). 1 Sv = 100 rem.

SI — SI is a French abbreviation for *Système Internationale* (International System), an internationally standardized system of units, giving a common language between nations and between the different branches of science and technology.

Tissue Weighting Factor (w_T) — The fraction of the overall health risk, resulting from uniform, whole body irradiation, attributable to specific tissue (T). The equivalent dose to tissue, (H_T), is multiplied by the appropriate tissue weighting factor to obtain the effective dose (E) contribution from that tissue.

Whole Body — For the purposes of external exposure, head, trunk (including male gonads), arms above and including the elbow, or legs above and including the knee.

CONCLUDING MATERIAL

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